

SD Times

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AONIX MARKETS COMPONENTS, MODELS TO SELECT AUDIENCE

BY DAVID RUBINSTEIN

Looking to spread its wings beyond the military and avionics industries, Aonix Corp. has acquired the Select visual modeling and component-based software development product line from Princeton Softech, a subsidiary of Computer Horizons Corp., for an undisclosed sum.

Aonix already had a visual modeling tool—Software Through Pictures—that, according to CEO Ashley Abdo, is used in highly engineering-oriented, distributed projects that have a safety-critical bent to them, such as those seen in the military and avionics industries.

The Select acquisition, Abdo said, allows Aonix (www.aonix

.com) to go after smaller commercial IT shops. "Select is more off-the-shelf oriented," Abdo said. "Commercial environments want only as much modeling as they need." Abdo said Aonix was working on a strategy to bring Software Through Pictures into the smaller commercial space, but that the acquisition "accelerated our entry into that space by about three years." Software Through Pictures is the more comprehensive modeling tool, Abdo said, supporting UML 1.3, while Select supports only a subset of the 1.1 standard.

The most important acquired product, according to Abdo, is Component Factory, which is

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Rogue Wave Emphasizes Consulting

New focus on simplified C++ libraries, helping customers deploy applications

BY ALAN ZEICHICK

Rogue Wave Software Inc., long known as a purveyor of object-oriented C++ component libraries, is shifting its corporate emphasis from packaged software to services. As part of this move, the company has consolidated its existing .h++ libraries into a new SourcePro C++ suite, and launched a new solution-services business. Rogue Wave has also reorganized its Stingray Windows-based components business, moving its developers from North Carolina to Oregon and Colorado, and eliminating 27 positions, or about 9 percent of the work force.

"In the past, we've been a shrink-wrapped software vendor for

developers. Now it's more than having developers go out and buy our software; we now have a different audience, higher in the organization," said Nick Becker, general manager for the new Rogue Wave Solution Services group. The company's emphasis, he said, had always been on selling tools to help companies develop software.

Now, the focus is on helping customers successfully deploy solutions. "We don't get paid until they deploy," he added.

Although the company is enhancing its services business, Rogue Wave isn't starting out from scratch, emphasized Beck-



SourcePro lacks .h++'s complex interdependencies, says Rogue Wave's Hendrickson.

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Java Messaging Storms the Market

Common set of APIs changes the face of messaging middleware

BY ANDREW BINSTOCK

Middleware ain't what it used to be. Messaging middleware—those tried-and-true systems that provide plumbing between discrete applications—has been changed, probably forever. And all it took was for vendors to agree to APIs for a common set of functions.

For many years, middleware was deployed between a central mainframe and a variety of applications hosted on clients, minicomputers and sometimes other mainframes. It was used by sites not only for its ability to pass data

in messages between disparate platforms, but also for its ability to hide platform- and protocol-specific code to enterprise applications. By being the universal interapplication interface, middle-

ware made enterprise programming easy.

In this context, messaging middleware thrived—especially IBM's MQseries product, which is not only the acknowledged market leader but the best example of this particular paradigm. The "MQ" in MQseries refers to "message queuing" and signifies the fundamental type of messaging middleware: that which moves a message from point A to point B. Point B is generally a message queue where the messages

are stored until the application for which they are intended checks for them. In this model, applications can hand off data to each other even if one system is offline: The message queue simply stores the messages until the application comes back online.

The other popular form of messaging middleware is publish/subscribe, or, more colloquially, pub-sub. This model is commonly used when one source wants to send messages to many recipients, generally at high speed. A classic example is a data feed of stock quotations being sent in real time to brokers in a bank's

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XML Schema Could Render DTDs Obsolete

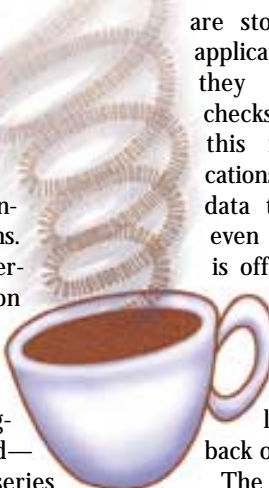
BY DOUGLAS FINLAY

The World Wide Web Consortium's release last month of its recommendation of the XML Schema Definition (XSD) for defining a logical data structure could make Document Type Definitions (DTDs) virtually extinct, except in specialized or localized cases in which all that is needed is a language structure.

"What we're looking at with the recommendation of XSD is the existence of a nonproprietary language from a consensus-based organization that makes it safer for data owners to use a schema language to design a data structure and rules that define that structure," said Michael Sperberg-McQueen, co-chair of the W3C's XML Schema Working Group. He said that until the

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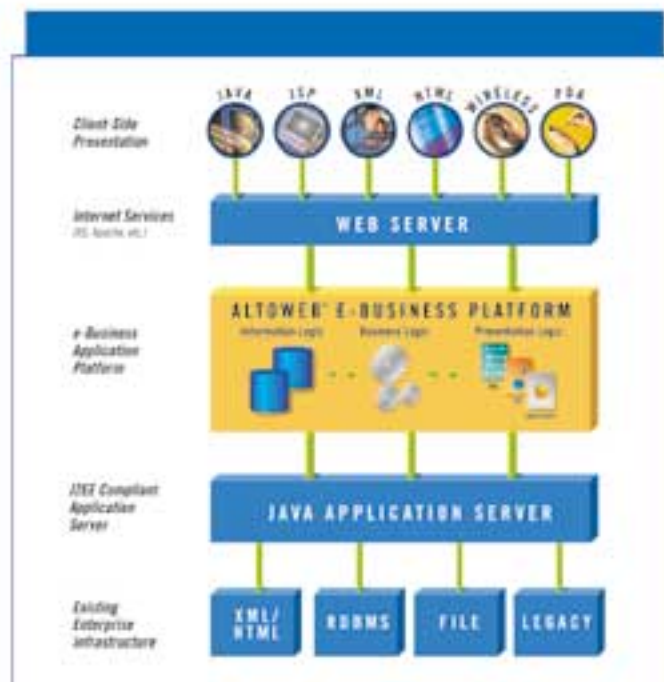
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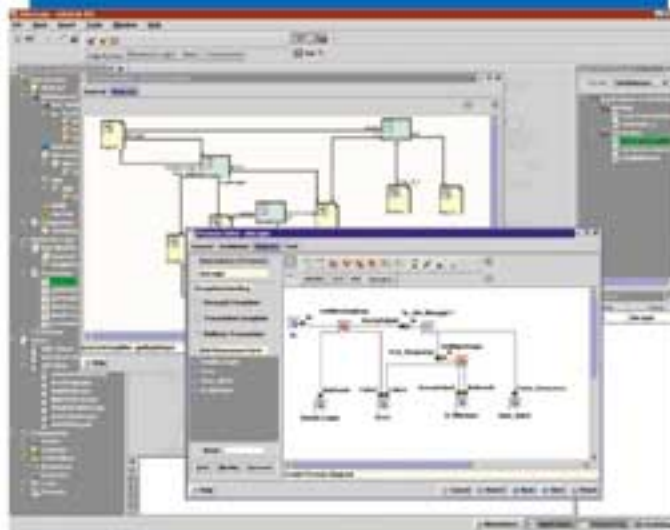
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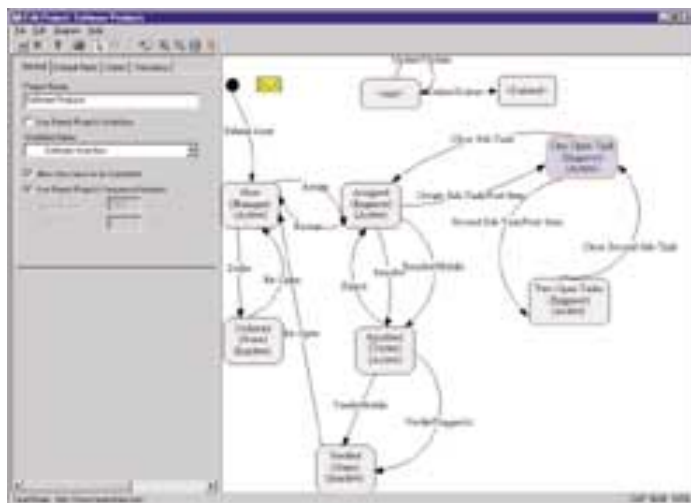


TeamShare Broadens Defect-Tracking Reach

BY EDWARD J. CORREIA

Enthusiasm spreads. That's apparently the attitude among users of software from TeamShare Inc., which in May released tTrack 5.0, an update to its collaborative defect-tracking system that the company says adds features enabling it to spread to departments beyond its core targets of software development, testing and support.

According to John Keller, a TeamShare senior product manager, being useful to other departments makes the solution generally more attractive as a software development tool. "The ability for managers to leverage their investment with TeamTrack for other purposes is a key point in the economy of today," he said. "We see lots of companies looking to do more with less, and many are finding themselves with multiple overlapping software tools.



Creating links between issues automatically generates workflow procedures.

So they're looking to consolidate and simplify, to reduce the administrative overhead." Keller said that many companies using tTrack in its intended way led to enthusiasm from other departments to apply the tool to help solve their problems.

This is now easier, Keller said, thanks to a more flexible database and the ability to create custom tables. Suzanne Sisson, a TeamShare (www.teamshare.com) product business manager, said that these features allow individual departments to use

tTrack to "solve problems beyond defect tracking and help desk" rather than having to store their data and managed tasks using tTrack's pre-defined fields, which she said was not uncommon before. Also new to tTrack 5.0 is a multilevel administration feature, which permits a software development team to grant outside departments administrative responsibility for their own tasks. This feature also benefits development teams, Keller said, because it lets them delegate administrative tasks to development team members without relinquishing high-level administrative capabilities.

In addition, the new version permits a more flexible licensing scheme, which Keller claims can reduce the overall cost of the system and increase collaboration among developers, testers and users. For

example, beta software testers can now be added to the system to input and track software defects for \$40 per user, rather than the \$600 imposed for a full user. The software is offered under a concurrent user scheme.

Also new is a graphical workflow editor, which presents a drag-and-drop interface for illustrating the workflow process, which dynamically generates all tasks in the system. "Before, workflow diagrams had to be drawn by hand and entered into the system manually," said Sisson.

According to Keller, tTrack 5.0 also now integrates with Microsoft Project and can synchronize with the touch of a button. "Every resource in Project becomes an assignee in tTrack," he said. "Project tasks become tTrack issues, including subtasks and dependencies." ■

CA BROADENS APPLICATION SERVER SUPPORT

Updated CoolJoe, CoolGen now target any J2EE server, operating system

BY EDWARD J. CORREIA

Strengthening its embrace of enterprise Java application development, Computer Associates International Inc. has added support for multiple Web application servers to a pair of its development environments.

The updated pair—CoolJoe 2.0, the company's Enterprise JavaBeans development environment, and CoolGen 6.0, its Web development tool—are both available now and can deploy applications for any J2EE-compliant server, including the latest version of BEA's WebLogic and IBM's WebSphere servers, the company said.

According to Wasim Ahmad, CA's vice president of application development solutions, the move also broadens a developer's choice of operating systems when deploying applications generated with the CoolGen tools. "Now developers can use CoolGen to produce browser applications that run on Solaris, Linux, a mainframe and Windows NT." The environment previously supported only Windows NT, he said.

Michael Dortch, principal analyst at the Robert Frances Group, said that such diversity could be important to compa-

nies that have not yet made commitments in infrastructure. "The Web server market is still pretty fragmented," said Dortch. "And for companies who haven't decided who their primary applications server vendor or platform is going to be, but are pretty convinced that they're going to be [developing] J2EE-compliant applications, the ability to get a handle on management of software components is going to be a big deal."

Also significant, Ahmad said,

is the ability to partition logic onto the Web server that formerly resided with the legacy host, something that CoolGen developers could not do before. "Unless you went off and built your own middleware, you were going back to the mainframe or to the Unix box. Now you have inside the development environment the ability to partition logic and take care of it in the middle tier," he said.



Business logic can now be moved to the middleware, says CA's Ahmad.

According to Amy Plenger, director of marketing for CA's Cool solutions, CoolGen's back-to-front approach is advantageous compared with environments that approach the problem from the client side. "Since we start at the enterprise server level and we're coming toward the front," managing massive transaction processing is not an issue when offloading

logic to a middle tier as an application scales, she said. CoolGen sells for \$12,000 per seat.

CA's EJB tools received a significant interoperability boost. "No enterprise JavaBean is going to be an island," Ahmad said, referring to enhancements to CoolJoe's importing capabilities. "We needed to have ways to hook into existing data components and sources." He explained that developers that had written code using tools such as Borland's JBuilder or IBM's VisualAge can import the classes into CoolJoe and "give them an Enterprise JavaBean wrapper, if necessary," for exposing them to a server. CoolJoe sells for \$3,500 a seat. ■

REBOL Shifts the Power to the Client

BY DAVID RUBINSTEIN

Distributed computing makes the Internet more efficient.

This is the philosophy that drives REBOL Technologies and its founder, Carl Sassenrath, as the company rolls out its REBOL View, a client-side platform for distributed computing that contains the REBOL virtual machine core.

"There is a movement to distributed computing," Sassenrath said. "It got a lot of its wind from Napster, whether it's true peer-to-peer or client/server it doesn't matter." Sassenrath said the power of client computers

put together far exceeds the capacity of servers, and claims Web user satisfaction can be increased dramatically by distributing the workload.

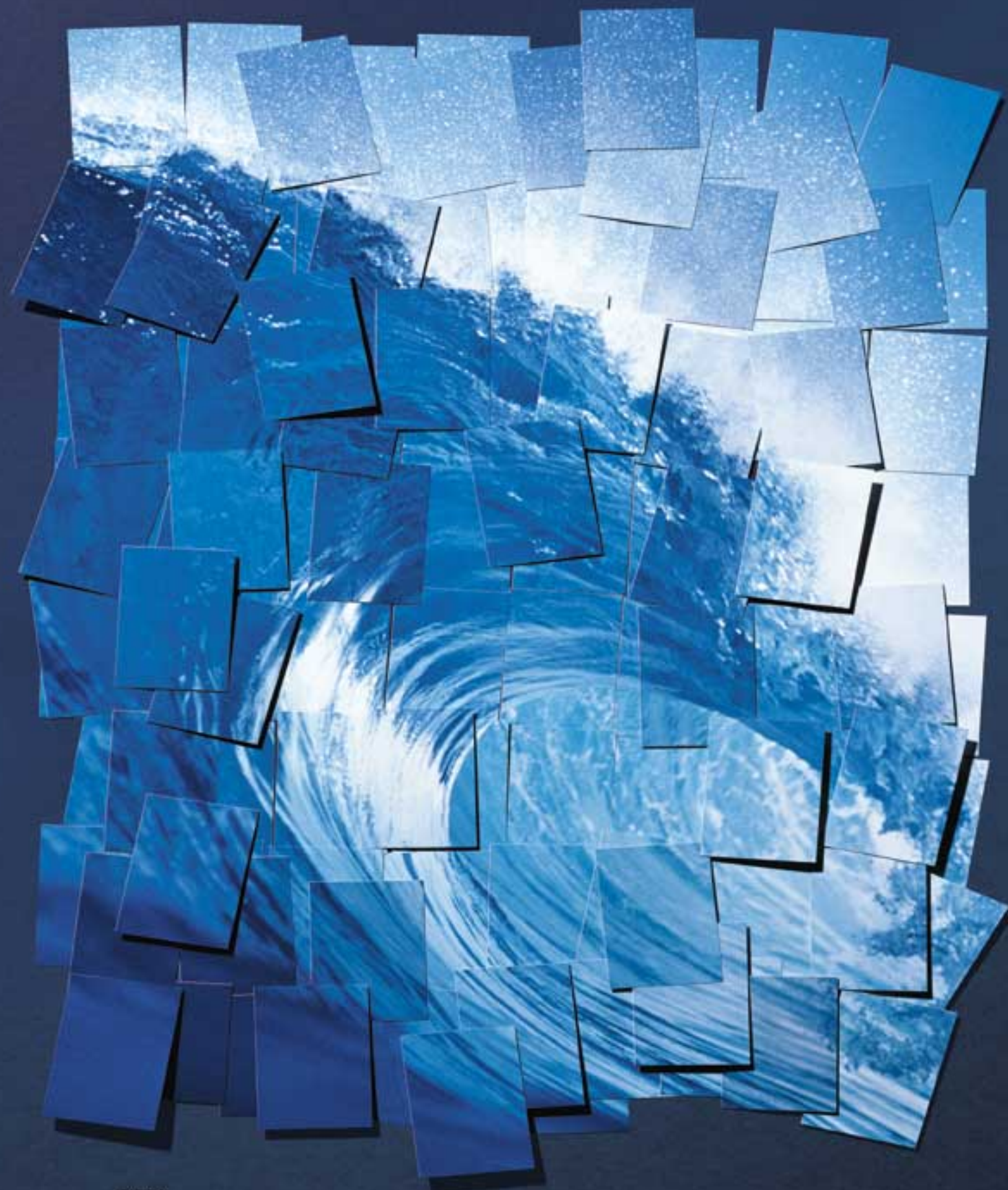
This is a vision shared by World Wide Web creator Tim Berners-Lee and a team of computer scientists at MIT, who recently announced the private concern Curl Corp. and its notion of an Internet that's executable from a client machine. They also share in the belief that the Web grew because early users wishing to create a Web page could see the source code underneath the page and recre-

ate it. The REBOL platform is open and downloadable for free at www.rebol.com, and the applications created in REBOL are distributed as source code, as is Curl content. A \$49 commercial edition, View Pro, provides encryption, external library access and shell application access to hide or protect program code.

Where the approaches to distributed computing vary, Sassenrath said, is that REBOL brings a lightweight solution to bear, as View weighs in at only 360KB. "It's not real complex," he said. "In one page of REBOL, you

can get something running that's distributed. When you go to a Web site like eTrade for a quote, that quote is probably just a couple hundred kilobytes, but they send you down 3 to 4 megabytes. There's no reason to do that. It slows down response times."

REBOL View can run either as a stand-alone piece or in conjunction with REBOL Command, which provides the server side of the virtual machine and allows database access, Sassenrath said. REBOL Express brings View and Command together in a single package, with such extras as management and authentication. View runs on multiple flavors of Linux, Unix and Windows. ■



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Borland's JBuilder 5 Embraces the Enterprise

BY EDWARD J. CORREIA

Borland Software Corp.'s new JBuilder 5, which shipped mid-May, is more than a revamp of its rapid application development environment. The RAD tool encompasses a bevy of enterprise-centric features, including XML support and deployment to WebLogic, WebSphere and other J2EE-compliant application servers, in addition to Borland's own application server.

According to Tony de la Lama, vice president and general manager of Borland's Java Business Unit, the company took a multipronged approach to addressing the needs of its typical user, which included improving host support, target support and embrace of emerging standards. "We're already certified for Windows, Linux and Solaris, and this summer we're adding [host support for] Mac OS X," which will be available only in the \$999 Professional version, he said.

In addition to application servers from BEA and IBM, applications developed with JBuilder 5 will run on any J2EE-compliant server, de la Lama said. "We create Enterprise JavaBeans to spec. So if [the server] is to spec, they'll work." Where the most uncertainty exists, he said, is in the debugging and deployment phases "because the application servers don't have a J2EE standard for those. So it gets a bit

harder to deploy on unsupported application servers."

Significant in the new release is support for XML, which de la Lama claims will set the stage for future Web services development capabilities. According to product manager Jürgen Fesslermeier, JBuilder 5 can generate and validate XML data with metadata from Document Type Definitions (DTDs) or XML schemas, which he said is useful for cross-device publishing.

However, JBuilder stops short of embracing SOAP, despite the fact that the protocol is now native to Borland's recently released Delphi 6.0. "We feel that technologies like SOAP and UDDI are not ready for prime time today," said Fesslermeier. "We want to give developers what works today so people can be productive today. XML is a means to a lot of ends, and we address the transformation, cross-device publishing and integration even without SOAP."

To help explain the disparity between its own products, de la Lama said that the designers of Delphi—which is used mainly to develop desktop and server applications and middleware—are taking technology to the "bleeding edge," but that for Java developers, platform strategies such as Microsoft's .NET and Sun One are still emerging, and developers are not looking for those tools. "What they do need is full XML support, which

sits underneath both these strategies. And we've taken a first step toward support for Web services, should it play out in our market."

According to de la Lama, the \$2,999-per-seat JBuilder 5 Enterprise edition will integrate with Rational Software Corp.'s ClearCase and Microsoft Corp.'s Visual SourceSafe collaboration tools. It also supports CVS, an open-source collaboration and version control system. In addition, the new version will feature XML and DTD relational database importing and exporting, visual creation of Enterprise JavaBeans with dynamic deployment, and Borland AppServer 4.5 development license.

The JBuilder 5 Personal edition, which includes JBuilder's drag-and-drop development and debugging environment based on the Java 2 JDK 1.3 and JPDA (Java Platform Debugger Architecture), is free for download, or \$99 on CD-ROM with manuals and a tutorial. All versions are available now. Borland also offers upgrade pricing.

At Sun's JavaOne conference next week, the company plans to announce a JBuilder 5 add-on and device emulators for supporting Sun's MIDP and CLDC device profiles. The profiles can be combined to create a runtime environment for applications targeting resource-constrained devices such as cell phones and handheld computers. ■

IBM Ties DB2 Closer to MQSeries, WebSphere

BY ALAN ZEICHICK

It's too early to guess how much IBM Corp.'s recent purchase of Informix Corp. will affect DB2, but in the short term at least, the company's multiplatform database is continuing to evolve. The latest update, DB2 7.2, announced in mid-May and promised to be generally available on June 8, adds new integration capabilities to tie the database closer to IBM's own MQSeries message-queuing middleware and WebSphere J2EE-compliant application server.

The most important improvement, according to Paul Rivot, director of database servers and transaction processing

at IBM (www.ibm.com/db2), is the strengthened link between the database and the message queue, where a new native capability of DB2 allows an MQSeries queue to look like a database table. "Before, if you wanted to share a database table between systems using MQSeries, you had to write C code to make the MQ calls. Now, all you have to do is use commands in DB2 to access the message queue as a table."

At present, this capability is available only with MQSeries, and not with other message-queuing middleware, said Rivot.

DB2's new level of integration with WebSphere involves communication between the

database and application server using SOAP and XML, according to Rivot. DB2 7.2 can now directly interpret SOAP messages sent by WebSphere, and use SOAP parameters and XML data to invoke DB2 stored procedures.

The third major change to the database, said Rivot, is the inclusion of DB2-to-DB2 links as a built-in feature. Formerly a separate add-in extension called Data Joiner, this feature allows a DB2 database server to share data with other DB2 servers across a network. Links between DB2 and third-party databases still require the optional Relational Connect extension, however. ■

News Briefs

COMPANIES

Targeting developers who use the Lightweight Directory Access Protocol, **Novell Inc.** has announced a Web site called LDAPzone.com that offers a central repository of educational materials, software downloads, industry articles and other information promoting directories and LDAP open standards. . . . **Infopia Inc.** has released an XML API to partners using its Marketplace Manager to enable these marketplace, commerce and marketing solution



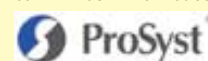
providers to add Marketplace Manager functionality, such as product listings and inventory information on multiple online marketplaces, to their offerings. . . . **NeuVis Inc.**'s partnership with **BEA Systems Inc.** integrates the NeuArchitect product with BEA's WebLogic Server, and gives users of both systems an integrated rapid application development platform for creating business-to-business collaborative applications. . . . **Informix Software**, a subsidiary of Informix Corp., will bundle its Cloudscape J2EE database with Iona Technologies Inc.'s iPortal Application Server. This lets Iona developers embed the Cloudscape database seamlessly into their applications. . . . **Serena Software Inc.** has integrated its ChangeMan WCM Web code and content management system into Microsoft Corp.'s FrontPage Web site creation and management tool to permit FrontPage users to create, manage and deploy Web content that coordinates with application changes across multiple platforms. . . . **Lightspeed Interactive Inc.** is building a custom adapter for **Fujitsu Software Corp.**'s i-Flow workflow engine to enable Lightspeed's iEngine knowledge distribution software users to automate, streamline and track corporate business procedures using i-Flow. i-Flow is a Java-based GUI that permits users to build workflow applications. . . . **SmartMode**, a subsidiary of Information Builders Inc., is offering free download of its Java Server Pages development tools.



Currently in beta, the tools, at www.smartmode.com, help developers build JSP sites that use XML and Cascading Style Sheets. . . . **Lumigent Technologies Inc.**'s Log Explorer version 2.0 helps SQL Server 7 and 2000 administrators with online data recovery and transaction analysis; the company claims that the tool can recover data even if the database and backup are corrupted or unavailable, and salvage data from dropped tables and transaction logs even when traditional recovery techniques fail.

PRODUCTS

Documentum Inc. has released a Web developer's kit to help programmers build browser-based user interfaces for its **Documentum 4i** content-management system. The J2EE-compliant WDK includes a component library and also enables content reuse to let Documentum 4i communicate with XML-enabled Web applications. . . . **ProSyst USA Inc.** has released **mPower Remote Manager**, an administration tool for the company's mBedded Server and mBedded Builder that enables appliance manufacturers and service providers to conduct software upgrades and updates on remote devices on the mBedded Server network, including using corresponding software bundles such as protocol bundles and application bundles, and billing for services used. . . . **Infragistics Inc.** has released **UltraServer Tree** and **UltraList Bar** for Microsoft's .NET Framework. UltraServer Tree applications construct, save and render trees and menus to HTML using predefined and customizable templates while supporting data binding to hierarchical data sets and any XML files through XSL style sheets. UltraList Bar is a navigation tool that brings the look and feel of Microsoft's Outlook personal information manager to applications. . . . **Infoteria Corp.** is now shipping **iMaker for Excel Version 2.0** that supports Microsoft's Excel 97 and Excel 2000 running on Windows 98/NT/2000 operating systems; sends encrypted e-mails with XML as the body; supports dial-up connections for SMTP servers; and supports user authentication via POP mail. iMaker enables users to send e-mails directly from Excel using XML on the front end. . . . **Sybox Inc.**'s now offers **Java 2 Certification Virtual Trainer** and **Java 2 Certification Virtual Test Center**, created for Sun's Java 2 certification. ▶ continued on page 28



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, such as a sports car representing “high-performance apps.”

New Strategies Underlie UDDI Release

Ariba to register users; Hewlett-Packard to host database

BY DOUGLAS FINLAY

Even as Universal Description, Discovery and Integration project members made public the news that the first release of the

UDDI.org business registry site, based on version 1 of the UDDI specification, was now fully operational, Ariba Inc. and Hewlett-Packard Co. were changing

membership strategies and roles, hoping to draw businesses to the registry, while positioning UDDI to fend off possible challenges from other registries.

HP has signed on to provide a hosting environment for the UDDI registry along with IBM Corp. and Microsoft Corp., replacing Ariba as a host. "Our decision to act as host was made independently of Ariba's decision to drop its hosting role," said Tom Gaskin, HP's group manager for UDDI. He said

that as its customers were becoming more active in creating Web services, they quickly discovered a need for a registry to get their services discovered, and hosting the database would help HP's customers register their services with UDDI.

Chris Kurt, Microsoft's group manager for UDDI and general manager of UDDI.org, said that there would be a limited number of invitations to group members to become hosts, adding that the membership was looking to maintain UDDI in a contained fashion similar to Domain Name Services, "where a dozen root DNS sites act as keys that then filter out to the rest of the world."

Ariba retreated from its original hosting role to instead take on a pioneering effort to actively register businesses to UDDI, because as registrar "it reflects the success Ariba has had in getting an integrated community of trading partners in utilizing Web services to connect buyers and sellers," said Nick Solinger, Ariba's vice president of marketing. He said that with some 30,000 businesses registered to the Ariba network, "we want to be able to drive those businesses to the UDDI registry."

Indeed, both he and Microsoft's Kurt said that by registering with UDDI, businesses would be able to add value to their customers. "Ariba is in some respects the pioneer in this critical next step for UDDI, that of layering valuable services on top of UDDI," Kurt said.

Yet, in the face of emerging business repositories and registries, such as the one from ebXML, and newer, more private ones focusing equally on discovery of services, UDDI members remain unperturbed by any future competitive pressure.

"I wouldn't look at new registries emerging as competition," said Scott Cosby, IBM's manager of e-business technologies marketing. He said it is a dynamic space that's evolving quickly, and that any new repositories are likely to overlap until they find their niche. "There is a role for additional repositories to interact with UDDI, to go to UDDI to discover and then do value added," he said. "But to do richer integration, you might need to go to another repository," he said.

Kurt said the hope is that any future registries will be complementary rather than competitive. ■

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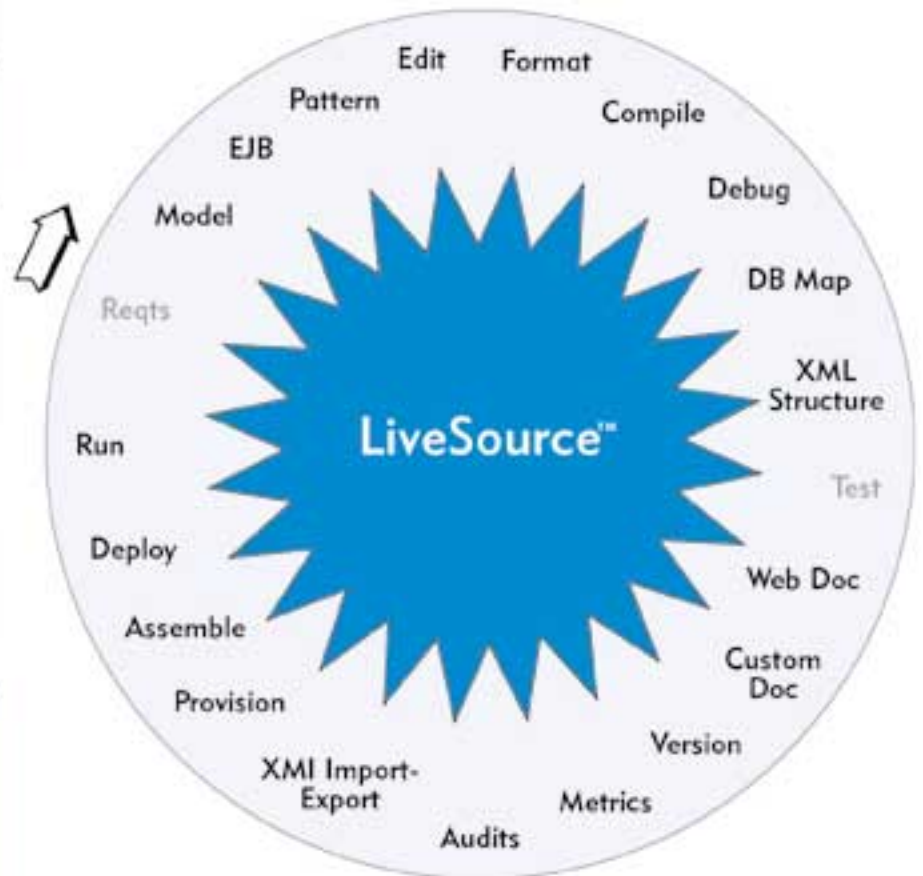
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Mac OS X

An Overview for Developers

With Mac OS X, Apple asserts its leadership in the advanced technologies and design sensibilities that are the hallmarks of any great operating system.



Mac OS X is a completely rebuilt implementation of the Macintosh operating system. It expands on Apple's technological strengths, such as industry-standard networking capabilities and industry-leading user interface design.

More importantly,

Mac OS X combines those strengths with support for a variety of technologies beyond those typically associated with the Macintosh, such as UNIX and Java 2 Standard Edition. This unique combination of technologies offers developers stability, power, and interoperability, beneath a well-designed, elegant, and intuitive user interface. As a result, Mac OS X presents new opportunities for both development and deployment.

Darwin

The stability of Mac OS X begins with Darwin, the open source core of the system. Darwin integrates a number of technologies, including the Mach 3.0 kernel, operating system services based on BSD UNIX, high-performance networking facilities, and support for multiple integrated file systems. Further, Darwin's modular design lets developers dynamically load such things as device drivers, networking extensions, and new file systems.

Apple and Open Source

Apple is the first major computer company to make open source development a key part of its ongoing software strategy. The core of Mac OS X, Darwin, is itself an open source project. This approach to operating system development allows developers and students to view the Darwin source code, learn from it, and submit suggestions and modifications. Developers can participate in the Darwin open source project by signing up at: <http://www.opensource-apple.com>

Darwin's advanced memory protection and management system ensures reliability by allocating a unique address space for each application or process. The Mach kernel augments virtual memory semantics with the abstraction of memory objects. This enables Mac OS X to manage separate application environments simultaneously, while presenting users with a seamless experience.

Darwin also supplies the following advanced functionality:

- Preemptive and cooperative multitasking.
- Symmetric multiprocessing (SMP) augmented by support for multithreading.
- Real-time support guaranteeing low-latency access to processor resources for time-sensitive media applications.
- An object-oriented device driver programming framework called I/O Kit.

Graphics System

Mac OS X combines three powerful graphics technologies, Quartz, OpenGL, and QuickTime, enabling developers to push graphics beyond anything users have seen on a desktop operating system.

Quartz

Quartz is the foundation of the Mac OS X imaging model. It is comprised of a high-performance, lightweight window server and a graphics rendering library for two-dimensional (2D) shapes. The window server features such advanced capabilities as device-independent color and pixel depth, layered compositing, and buffered windows for the automatic repair of window damage.

The Quartz rendering model is based on the cross-platform Portable Document Format (PDF) standard, enabling developers to easily embed and manipulate PDF data within any Mac OS X application. This yields such benefits as automatic PDF generation and save-as-PDF, automatic onscreen preview of graphics, conversion of

PDF data to printer raster data or PostScript, and a consistent feature set for all printers.

The layered compositing engine used by Quartz allows developers to create unique onscreen effects. It replaces the "switch model" of traditional windowing systems with a "video mixer" model in which every pixel on the screen can be shared among windows in real time. This model allows for smooth transitions between the states of the graphical user interface.

Quartz also provides developers with these advantages:

- On the fly anti-aliasing of graphics and text enabled by the use of a floating-point coordinate system and high-precision vector processing.
- Direct access to the video frame buffer.
- Automatic detection of and benefit from the floating-point coprocessing performed by the Velocity Engine in PowerPC G4 microprocessors.

OpenGL

For three-dimensional (3D) graphics, Mac OS X features an optimized implementation of industry-standard OpenGL. OpenGL is one of the most widely adopted graphics standards today, making code written to OpenGL extremely portable and making generated visual effects highly consistent. It is specifically designed for games, animation, CAD/CAM, medical imaging, and other applications that need a rich, robust framework for visualizing shapes in two and three dimensions.

QuickTime

Mac OS X comes packaged with the latest version of QuickTime, a powerful multimedia technology for manipulating, enhancing, and storing video, sound, animation, graphics, text, music, and even 360-degree virtual reality. It also allows streaming of either live or stored digital video. As a cross-platform technology, QuickTime can deliver content on Macintosh and Windows systems. Augmenting its cross-platform capabilities, QuickTime supports every major file format for images and every significant professional file format for video.

Through the QuickTime plug-in, QuickTime's digital video streaming capability is extended to all popular web



Mac OS X system architecture

browsers. The plug-in supports over thirty different media types and makes it possible to view over 80 percent of all Internet media. QuickTime also features other advanced web streaming capabilities, such as movie "hot spots" and automatic web page launching.

User Interface

The most visible expression of Mac OS X power and technology is its new user interface, Aqua. Apple applies its leadership in user interface design to Aqua, incorporating many of the qualities and characteristics Macintosh users expect, while adding advancements to benefit expert and novice users alike. Ease of use is factored into every feature and capability.

Consistent with Apple's design philosophy, visual enhancements serve not just as beautiful images, but as cues to the functionality and operation of the system.



A prime example of this user-focused design is the use of "sheets." These non-modal dialog boxes attach directly to the title bar of the relevant document,

intuitively linking document and action. The non-modal nature of sheets prevents applications from hijacking the system and interrupting user workflow.

Interoperability

Mac OS X makes unprecedented use of technologies and standards that allow interaction with other platforms. This affords both developers and users the opportunity to use Macintosh computers in new places and in new ways. Mac OS X manages multiple file and networking formats and supports a wide range of industry-standard protocols. Based on an enhanced VFS design, the file system supports multiple local formats and complies with POSIX file system semantics.

Hardware connectivity is simplified through built-in support for Ethernet (10/100/1000Base-T); serial connections for modems, ISDN, DSL; wireless networking through AirPort (IEEE 802.11); USB (Universal Serial Bus); and FireWire (IEEE 1394).

Java 2 Standard Edition

Mac OS X ships with a complete implementation of Java 2 Standard Edition (J2SE) version 1.3, including the HotSpot client virtual machine. Benefits of Apple's Java

implementation include access to Aqua user interface elements "for free" through Swing, native preemptive multitasking, automatic multiprocessing support and management of JAR files as shared libraries.

This last advance improves the speed of execution and reduces the RAM footprint of applications which rely on the same archive, such as applications within suites. Mac OS X also plugs the Java windowing toolkit more directly into the Mac's native windowing toolkit, giving Java applications and applets the graphics performance benefits of Quartz.

Backward Compatibility

To afford users a gentle migration path, Mac OS X builds on Darwin's ability to manage multiple application environments simultaneously. The Classic environment is actually a full version of Mac OS 9.1 running in a protected memory space under Mac OS X. As a result, most Mac OS 9 compatible applications will run side-by-side with Mac OS X applications.

Additionally, developers can code for Carbon, a native Mac OS X environment that allows programmers to take advantage of advanced Mac OS X features while retaining compatibility with the installed base of Macintosh computers running Mac OS 8.1 and later.

Development Options

There are multiple ways to develop for Mac OS X. Individual skills, preferred languages and tools, target user base, and time to market concerns will influence a developer's approach:

Carbon

The Carbon APIs are based on earlier Mac OS APIs. While Carbon allows applications to take advantage of Mac OS X features such as multiprocessing support and the Aqua user interface, Carbon is specifically designed to allow compatibility with older versions of the Mac OS.

Cocoa

The Cocoa application environment runs natively under Mac OS X. For those who wish to develop for Mac OS X using rapid application development (RAD) tools and object-oriented techniques, the Cocoa frameworks provide a fast and complete way to do so. These frameworks offer both Java and Objective-C APIs.

Java

The Java application environment allows development and execution of Java programs on Mac OS X, including



100% Pure Java applications and applets. The J2SE implementation in Mac OS X is designed to allow maximum Java application portability. Developers can also use the Java development language to write a Cocoa application, allowing Java programmers to use a familiar language to develop for a new platform.

UNIX

Since Mac OS X is built atop a UNIX kernel, porting UNIX-based applications to the platform is relatively easy. This enables enterprise-level UNIX products to enjoy parity with consumer and business applications on a commercial desktop platform.

Mac OS X offers opportunities for developers from many different backgrounds to port and build innovative and compelling applications.

And the best way to get started is with the Apple Developer Connection:

Apple Developer Connection membership programs offer benefits such as prerelease software seeding, code-level technical support, news and technology updates, and discounts on business support services. Developer documentation and resources are available free at <http://www.apple.com/developer>.

To learn more about developing for Mac OS X, visit the Mac OS X development website at <http://developer.apple.com/macosx>.

To request a free **Programming for Mac OS X CD-ROM** containing tutorials, sample code, and technical documentation designed to provide step-by-step descriptions of the methods developers can use to create Mac OS X applications, visit <http://developer.apple.com/sdtimes.html>.



A D C

Apple Developer Connection

Visual Studio Targets Architects

New Microsoft developer suites offer enhanced modeling, templates, frameworks

BY ALAN ZEICHICK

There's more to life than coding, compiling and debugging—so says Microsoft Corp., which is moving its Visual Studio.NET development suite up-market to better accommodate large-scale projects that require high-end modeling, and for which a carefully architected set of frameworks and application templates can help transfer design knowledge and policies from senior developers to the rest of the team. The result: Two new versions of the company's ubiquitous suite.

The new Visual Studio.NET Enterprise Architect lets top developers model applications and databases, as well as author templates. The new Visual Studio.NET Enterprise Developer allows programmers to use those models and templates. Microsoft will continue offering the existing Visual Studio Professional, but it will be geared more toward smaller development shops and contractors.

"We've done a great job focusing on improving developer productivity in the edit/compile/debug cycle," said

Dan Hay, lead product manager for Visual Studio.NET, "but that's not the biggest enterprise challenge." He cited the question of J2EE versus .NET: "In most organizations, it's going to be a combination, and that means XML [as a communications protocol]. Not only will there be .NET and J2EE, but moving forward, there's also a lot of legacy [code] that's not going away."

Technology platforms aren't the only issue, Hay said. "Regardless of which technology enterprises choose, there's a common set of issues that enterprises have struggled with for 20 years: a lack of qualified people and heavy turnover. Maybe it's slowed down lately," he said, "but you can't expect to hold onto your key IT staff. Who needs to solve this problem? Architects and senior developers."

Thus the new editions of Visual Studio, which are entering their second beta in June, and which Hay predicts should be generally available by the end of the year.

The Enterprise Architect

version of the software will include an as-yet-unnamed new version of the Visio visual modeling tool that, according to Hay, is designed for both database and application models. "It supports UML 1.2 with all eight diagrams," said Hay, "and has full round-trip engineering for all three languages we support: C++, C# and Visual Basic."

For database modeling, the new Visio, which Hay said will be available only as part of this Visual Studio.NET Enterprise Architect bundle, offers conceptual, logical and physical modeling. "For conceptual modeling, it goes one level of abstraction higher than logical modeling," he said, "making the models accessible by business analysts who can use simple English statements to describe business concepts, and then see [the model] visually or in an English-like way."

Visio will be taking a more prominent position as a software development tool, according to Hay, who noted that after Microsoft purchased the tool in September 1999, the primary emphasis was on integrating

the diagramming software in Microsoft's Office suite. Now, he said, the members of the Visio team who had developed its UML extensions have been transferred to the Visual Studio business unit.

Both new versions of Visual Studio.NET will share the ability to work with templates and frameworks, said Hay, who defines templates as providing an application standing point and policies, and frameworks as a means to distribute common functionality across an application, such as security, manageability or application-domain features such as e-commerce.

To help architects design and deploy templates, Microsoft has released a new XML-based Template Definition Language (TDL). The language is used to define the templates, which will be a new "project type" in Visual Studio.NET, and which allows architects to "create a simple structure or skeleton for an application, set default properties, include/exclude specific technologies or capabilities and link in reusable components," he said.

The Enterprise Architect version of Visual Studio.NET will allow developers to create such templates; the Enterprise Developer version allows the use of those templates, but not the ability to create or change them. According to Hay, Rational Software Corp. will be offering versions of its Rational Unified Process and E-Business Accelerators design patterns written in the new TDL format for use with Visual Studio.NET, to coincide with the general availability of Visual Studio.NET.

The new frameworks capability, which both new versions of Visual Studio.NET will be able to create and use, helps developers spread features across an application, noted Hay, who said that Microsoft will be releasing one framework with the software, which provides tools for application management. "It encapsulates 17 Microsoft technologies with a single API," said Hay, such as Active Directory and WMI (Windows Management Instrumentation). The company will be developing future frameworks for publication on its Web site, and also views them as a third-party development opportunity through its Open Tools initiative. ■

WebGain Studio Comes Together as One

Tighter integration, new tools enable Web services

BY DAVID RUBINSTEIN

Making a move into the world of reusable Web services, WebGain Inc. will announce at JavaOne this week the addition of new tools and enhancements to the existing ones in the WebGain Studio product suite, with the goal of allowing business people, IT analysts and developers to interact to create applications more quickly.

Now 16 months old, WebGain (www.webgain.com) has taken disparate products it has acquired or licensed from a range of originators—the TopLink object-relational mapping tool from The Object-People, the StructureBuilder modeling tool from Tendril Software and the VisualCafé IDE from Symantec among them—and finally has been able to complete a tight integration within



Studio is finally an integrated suite, says WebGain's Menard.

Studio, which sells for \$4,995. "It looks like one product; it feels like one product," said WebGain CEO Joe Menard. "It's finally an integrated suite."

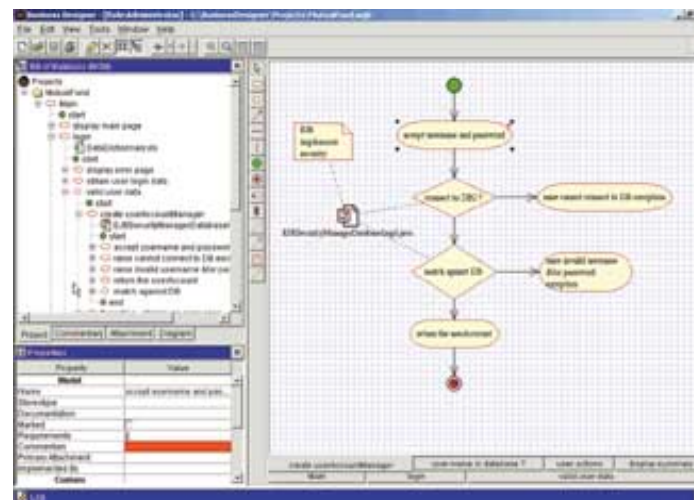
Changes to the upgraded WebGain Studio start with Business Designer 1.0, a new tool to the suite that provides a visual way to capture business processes, and allows for attachments of

such things as requirements documents as well as the actual code being worked, Menard said. "It helps ensure the application you wanted comes out the way you want," he said. Each product within Studio can be purchased separately.

The IDE, VisualCafé 4.5, has gotten "a final cleanup," Menard said, confident that quality issues that have plagued the development environment will be gone. WebGain has added JSP support and

server support for BEA's WebLogic app server as well as those from Hewlett-Packard's Bluestone and the Sun-Netscape alliance, iPlanet. Support for IBM's WebSphere will be added when version 4.0 of that server is released, Menard said, since the current version is not compatible with the most current J2EE specification.

On the modeling side, StructureBuilder has been enhanced with two additional models—activity and state—as well as the ability to read models in XML and XMI formats, Menard said, extending the UML to the entire development team. StructureBuilder also has improved code generation and verification of EJBs, Menard explained. WebGain has added another new product—Quality Analyzer 2.0—into the Studio suite. A tool originally acquired in the Metamata deal, it helps devel-



Business Designer is layered on UML with a path to StructureBuilder.

opers maintain quality while they code and then lets the QA people see how the programmers did after the fact, Menard said. Three parts of the tool are WebGain Audit, which allows for custom code-checking rules and ensures developers are not violating principles of Java programming; WebGain Metrics, which provides traditional software metrics; and WebGain Cover, which provides a real-time view of code while reporting its findings.

Also added to the suite is Application Composer, which was released the first week in April and is a Java-based GUI for the assembly of components by developers and nondevelopers alike, Menard said. "Application Composer will excel for Web services," Menard said, as enterprises try to maximize the services through reuse. The simple GUI allows other parts of the business to participate in application-building, he said. ■



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Web Design Firm Reveals Its Secrets

Starpoint Solutions markets integrated tools, methodologies to the enterprise

BY EDWARD J. CORREIA

Like a carpenter offering to sell copies of his time-tested tool belt, Starpoint Solutions, a Web site design consultancy, is now

marketing the tools of its trade, which combine its own proprietary technologies with off-the-shelf developers' tools to form an integrated tool suite for

developing high-end Web sites and Internet applications.

The Flite Framework, introduced in April, is built around Flite Path, Starpoint's develop-

ment methodology for building Web-based systems. The Starpoint methodology includes procedures for development of site and application requirements

and the design of a preliminary specification, collectively known as an engineering blueprint.

According to Bob Gold, co-founder and co-CEO of Starpoint (www.starpoint.com), formerly known as TIS Worldwide, the tools that his company once used to develop solutions for clients now can permit the clients to do the work themselves. "The dot-com and technology crash on the Nasdaq has increased pressure to manage IT departments," he said. "Every dollar spent counts now more than ever." Customers may purchase the tools together with a blueprint, or simply buy the blueprint and use their own tools.



Starpoint's tools are combined with those from a trio of independent software vendors. Content management and knowledge repository capabilities are provided by Documentum Inc.; Niku Corp. adds a software component warehouse for storage and indexing; and Starbase Corp. provides resource management, skill-set tracking, time and charge-back functions and general project tracking and reporting.

According to Gold, with tools such as the knowledge repository, the system also can serve to help companies retain and proliferate the intellectual capital accumulated by their developers and other technical staff, and thereby make software development and support more efficient.

Paul Wanuga, Starpoint's CTO, said that each company's requirements are different. "Sometimes companies don't want to throw everything away and start over from scratch. Our business value is the ability to integrate with a company's legacy systems." At its minimum, he said, the Flite Framework requires just a Lotus Domino server. However, in more complex situations, a J2EE-compliant server may be required to glue together disparate components and systems.

The Flite Framework is available now, with pricing dependent on the project size and scope. Starpoint also has an agreement with Intel Corp., which will provide managed hosting capabilities for the system worldwide. ■

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ZeroG Revamps InstallAnywhere for the Web

Software extends reach beyond clients, targets server-side application deployments

BY DOUGLAS FINLAY

While previous versions of Zero G Software Inc.'s InstallAnywhere application deployment software focused squarely on installing applications on clients, the recently released InstallAnywhere 4.0 has added the capability to automatically deploy software via Web services or onto application servers.

"InstallAnywhere 4.0 is targeted at the complex types of deployment on the server side—things that involve Web services, application servers and Enterprise JavaBeans," remarked Eric Shapiro, Zero G's (www.zerog.com) CEO. He added that version 4.0 was further targeted at those developers now combining both client-side and server-side application deployments.

Shapiro said that with 4.0, developers could put new applications on a Web page generated by his software, and then automatically deploy the applications through the Web to any platform without users' having to figure out where the downloads go or how to run them. "Not only does it track the software, but it activates the download from the Web page directly to enable developers to increase their connections with users to ensure that they have installed the software," he said.

A new screen offers panel motifs that list the deployments that have taken place and what those deployment folders look like at the targeted site. Screens featuring more than 20 preconfigured actions also enable developers to choose an action they want the installer to perform, such as "register an NT service" or "get Win32 registry entry."

Shapiro maintained that because of the new screen designs, deployment would become easier because most functions are automatic across multiple platforms, reducing the cost of learning how to deploy on multiple environments. He added that with the new screens, developers would be able to install programs within five minutes at target sites.

Other new InstallAnywhere features include project wizards for setting classpaths in Java, which are used by the operating

system to find where programs are; and for choosing a main class, which provides information about entry points into applications. "[Setting classpaths

and choosing main classes] are two arcane settings needed for any Java application to be set and working properly," Shapiro said.

In addition, the Linux ver-

sion includes the Red Hat Package Manager, a standardized way of keeping track of software on Linux servers; and Java VM Packs, units that plug

into the installer that contain Java libraries. InstallAnywhere also runs on Macintosh, Unix and Windows. Pricing begins at \$995. ■

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Whistler = Windows 2002

BY ALAN ZEICHICK

Just when you thought you were getting a handle on Microsoft Corp.'s operating-system naming policies, the company throws a curve ball. The official name of Microsoft's updated Windows 2000 Server family, previously referred to using the code name Whistler, will be...Windows 2002.

For the first time, this represents a delineation between desktop and server operating systems built on the old Windows NT code base. In February, Microsoft revealed that the next version of Windows 2000 Professional will be called Windows XP, allegedly to denote the "experience" built into the software. The company recently unveiled that Windows XP will ship in two 32-bit versions: a basic "home" version meant to replace the Windows 9x/Me, and a "professional" version geared at the corporate desktop. The professional version supports multiple monitors, dual processors, dynamic and encrypted disk partitions and group policies. There will also be a 64-bit version of Windows XP Professional.

To limit business uses from deploying the presumably less expensive Windows XP Home version, Microsoft has removed its tape-backup services, ability to join a Windows NT domain, SNMP manageability and NetWare client. According to published magazine reports, the Windows installer disallows upgrades from Windows NT 4.0 Workstation or Windows 2000 Professional to Windows XP Home, but upgrades are permitted to Windows XP Professional.

Microsoft claims that all three versions of Windows XP, currently in their second beta, will be generally available on Oct. 25.

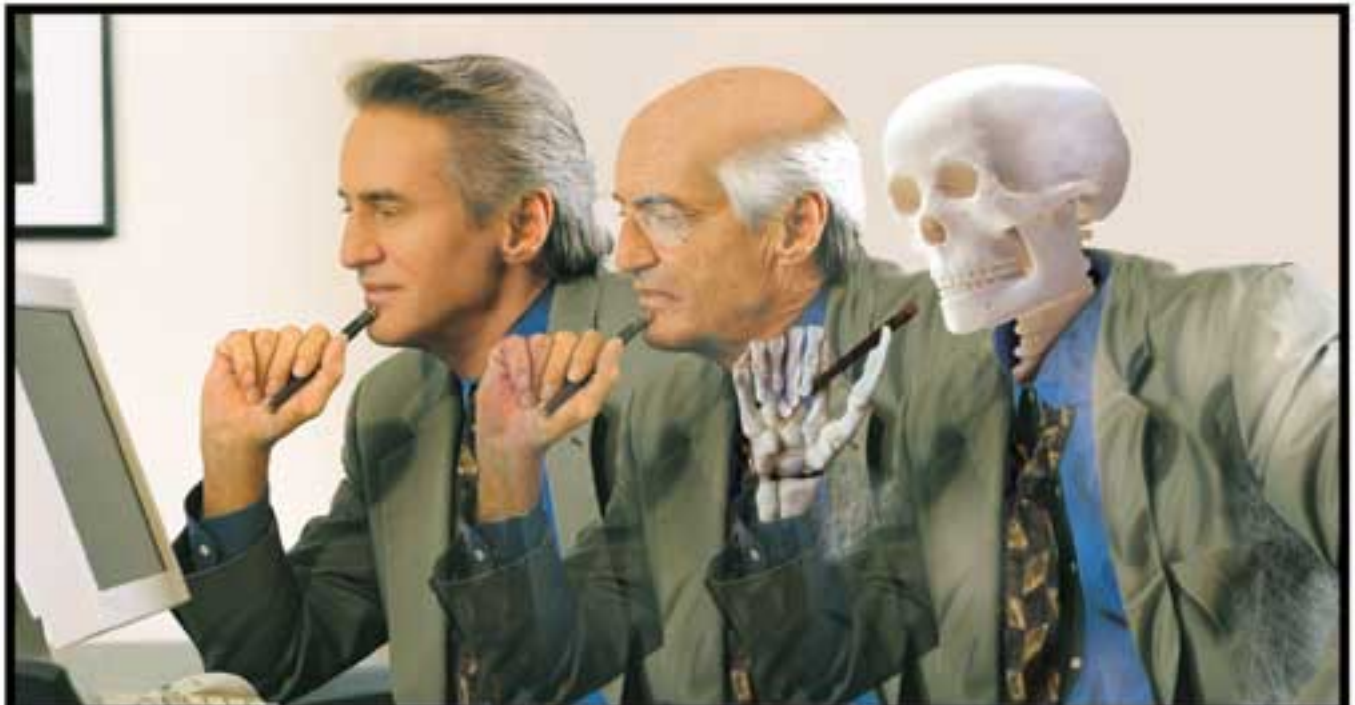
The Windows 9x code base, which began with Windows 95, then Windows 98, and is now represented by Windows Me (Millennium Edition), will no longer be continued. The migration path for home users will be to Windows XP Home; business will be pushed toward Windows XP Professional.

Windows NT 4.0 Workstation, which turned into Windows 2000 Professional, will be rejuvenated as Windows XP Professional.

Windows NT 4.0 Server and Windows NT 4.0 Server Enterprise Edition, which evolved into Windows 2000 Server and Advanced Server, will now be reborn as Windows 2002 Server. The company has not dis-

cussed different editions of Windows 2002 Server, although it has stated that there will be a 64-bit Itanium version. Microsoft also has not yet discussed a time frame for release of the server operating systems. ■

Code Base	Products	The Future
Windows 95	Windows 95, Windows 98, Windows Me	Discontinued (migrate to Windows XP Home)
Windows NT Workstation	Windows NT 3.x/4.0 Workstation, Windows 2000 Professional	Windows XP Professional
Windows NT Server	Windows NT 3.x/4.0 Server, Windows 2000 Server	Windows 2002 Server
Windows NT Enterprise Edition	Windows NT 4.0 Enterprise Edition, Windows 2000 Advanced Server	Uncertain



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Punching Up Your Applications

BY EDWARD J. CORREIA

Managing change has taken a new turn. Punch Networks Corp., which markets a Web-based file-sharing and collaboration system, is now offering a Punch Developer Program, a set

of tools and services that permits developers to add Internet file storage and collaboration capabilities to their applications.

The service works in conjunction with WebGroups, the company's fee-based service that lets

users store documents on its secure servers or a company's own licensed server. WebGroup members can download and edit files and keep track of changes. Upon uploading a changed file, Punch's software performs a

binary comparison of the two files and uploads only the differences. An e-mail message is then distributed to all WebGroup members informing them of the change. File locking prevents multiple users from submitting

changes that overwrite each other. And while similar to I-Drive's recently released ESP, a platform for designing Web-based file storage for Internet appliances, Punch is aiming squarely at the desktop environment.

According to John Williams, general manager and vice president of marketing at Punch (www.punchnetworks.com), the idea of Web-based collaboration quickly caught on in the development community. "When we first came out with this service, software developers were looking at it as virtual source-code control," he said. And although developers were not the primary audience, "we figured why not make our server software a platform and create a set of tools to allow developers to take our file management and integrate it with anything," Williams said.

The resulting tools, which the company makes available for free, consist of three main components: one for the customer's server, one for creating client applications, and the third residing at Punch Networks.

For the customer's server, a Java SDK provides classes with methods for invoking login, logout, server query and file publish and download functionality that can be called from within other server applications. In essence, this allows a company's server to trigger events on a Punch Networks server, such as the creation of WebGroup users or the movement of files. Pricing is based on the volume of application users.

The Windows client SDK includes an ActiveX COM object that can be dropped into Windows development environments—including Visual C++ and Visual Basic—or called from JavaScript or within an HTML page. This automates the task of moving a file from a local machine to a server and performs the file comparison, according to the company.

To David Campbell, Punch Networks' founder, the third component, called Paris, is the most exciting. "Paris will switch the Punch server's default output from static HTML to XML, which can be transformed using XSL on the server to whatever format the style sheet specifies. Now we allow anybody to append their own style sheet as part of the URL stream," he said, giving developers the ability to store or generate style sheets anywhere on the Internet. ■

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Microsoft Offers Services for Web Services

Developer site gives guidance, tools for creation of .NET applications

BY CHRISTINA PURPI

In an effort to drive more developers to its .NET strategy, Microsoft has created the Hosted Application Development Community, a developer Web

site with advice, guidance and tools to ease the transition into the new environment.

The Web-based community (www.microsoft.com/asp) will supply ISVs and enterprise

developers with the technical and business knowledge, support and guidance to be able to build their applications to be run on Microsoft's .NET servers, according to the company. Bul-

letins, white papers, case studies, video presentations and a newsgroup are among the particulars being offered in order to help move ISVs into the .NET environment. Also, members

will receive tools such as a UDDI SDK and SOAP toolkit for Visual Studio 6.0 for the creation of Web services to be built on the platform.

"ISVs have told us they recognize that the future is in the software-as-a-service model and that it will take a new generation of hosted applications to get there," Dwight Krossa, Microsoft's director of emerging business, said in a statement.

According to the company, ISVs that are Microsoft Certified Partners will receive a free trial period of access to a hosted application specialist who will offer consulting regarding architecture, design, development or deployment issues through the end of this month. After the trial period, the advisory service will be available at a standard rate of \$195 per hour. ■

MICROSOFT BUYS SOLUTION FOR WEB CONTENT

BY CHRISTINA PURPI

No longer wishing to rely on outside content management solutions, Microsoft has acquired NCompass Labs Inc. and its Resolution 4.0 content management tool for \$36 million in an all-cash deal.

Previously, Microsoft had relied on partners such as Interwoven Inc. and Vignette Corp. to offer Web content management tools. With the acquisition of NCompass, whose Resolution tool enables users to create, approve and edit Web pages, Microsoft is now able to provide those services itself.

"Owning the product [as opposed to working through a partner] allows us to innovate more quickly and drive a higher level of integration across the rest of the platform," said Barry Goffe, group manager for .NET enterprise solutions. Microsoft also has long-term plans to innovate into the Web management market.

NCompass reduces the time needed to bring applications to market and will create and deliver multilingual wireless Web content, in addition to personalizing content for e-commerce sites and large-scale Web deployment, said the company.

Resolution 4.0 will be delivered this fall as a stand-alone product rebranded as Microsoft Content Management Server 2001, according to Goffe. ■

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SCHEMA

◀ continued from page 1

schema was recommended, developers were often loathe to use vendor-specific schemas because the developers would become locked into only one vendor's schema.

He said that where DTDs

had been used to define physical structures for using names, XSD could now replace them. "While DTDs define physical name structures, XSD's logical structures provide more functionality," he said. But, he added, a key point of the release is that XSD will continue to coexist with DTDs. One such specialized

case for using DTDs might involve the use of MathML in a document, for example. "MathML [documents] would certainly use DTDs because they can define characters by naming them rather than embedding them," he continued. He said that developers using MathML could type in the name "alpha"

rather than embed the Greek letter for alpha.

Kate Fessenden, Aberdeen Group's research director for enterprise XML, said that the W3C's release of XSD was absolutely necessary for business in providing robust standards for communication, in order to "keep data smart by keeping it

with the content." She added that the schema would provide additional extensibility and energy within the core of XML.

David Turner, Microsoft Corp.'s senior program manager for XML technologies, agreed, saying, "The recommendation of XSD is very good news for the industry as a whole because, as an agreement, customers will know how XML is described moving forward."

Turner maintained it would be possible to eliminate DTDs because of the richness offered in XSD in validating data and conforming content to sets of rules, but that those with investments in DTDs needn't necessarily switch to XSD because DTDs do define structure. He said those just starting off would benefit greatly from XSD over DTDs, however.

Turner said release of XSD recently enabled Microsoft to upgrade several of its products: MSXML 4.0 parser, to include XSD to replace its de facto XML Data Reduced standard; SOAP Toolkit 2.0, to include automatic generation of appropriate serialization formats for datatype models; and SQL Server 2000 Web Server release 2, beta 1, to use XSD to provide richer mapping to relational data.

"XSD is extremely important to us in helping cover whole business process integration, from both the business-to-business and enterprise integration perspectives, as well as B-to-B transactions with trading partners," said Jay Gauthier, webMethods Inc.'s director of product development. "The ability to have a well-defined definition of what an XML document should look like, coupled with our ability to validate that it is well formatted, are both of huge interest to our customer base," he said.

Lee Buck, Tibco Software Inc.'s vice president and chief scientist of XML technologies, said that key to XSD would be its ability to allow its customers to take the next step in their XML deployments. "XSD will provide richness at a very precise and technical level to describe the Web services that companies will make available to people on the Web," he said.

Also included in the XSD recommendation are an XSD Validator and a Test Suite Collection that will verify and provide tests to measure XSD compliance and accuracy, Buck said. ■

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New York Prepares for .NET Conference

BY DOUGLAS FINLAY

The momentum surrounding Microsoft Corp.'s developing .NET strategy takes center stage at the 9th annual VBITS Visual Basic Conference being held at New York's Marriott Marquis from June 20 to June 23.

With at least 700 paid developers projected to attend, VBITS promises to differ from previous conferences due to the emergence of Microsoft's .NET strategy. "Microsoft's .NET ini-

Mindful of developers' need to not lose sight of the existing Visual Basic 6 development environment while keeping an eye toward new .NET developments in Visual Basic.NET, this year's confer-

ence will offer 40 sessions and eight day-long workshops that will be divided between both development environments, according to The.

Two keynotes are scheduled: "Exploring the .NET Architec-

ture," by Rob Copeland, Microsoft's Visual Basic product manager; and "Rules of Engagement for Creating a Superior Customer Experience," by Alan Cooper, founder of Cooper Interactive Design, and inventor

of the Ruby language—precursor to VB, which included the original VBX interface for dynamically installing controls.

Workshop topics covered include XML, object-oriented programming and .NET. ■



tiative cuts across all its development tools, and represents the single most dramatic paradigm shift in Visual Basic since its inception," said Lee The, Windows editorial director for Fawcette Technical Publications' conference division, which owns and produces VBITS. He said that .NET presents a new challenge to Visual Basic developers.

VBITS 2001 CONFERENCE AND EXPO

CONFERENCE:

June 20-23
New York Marriott Marquis
New York

PRE-CONFERENCE WORKSHOPS:

Wednesday, 9 a.m.-8 p.m.

CONFERENCE SESSIONS:

Thursday, 10:20 a.m.-5:30 p.m.;
8 p.m.-9 p.m.

Friday, 10:20 a.m.-5:30 p.m.

KEYNOTE SESSIONS:

Thursday, 9 a.m.

"Exploring the .NET Architecture,"
Rob Copeland

Friday, 9 a.m.

"Rules of Engagement for Creating
a Superior Customer Experience,"
Alan Cooper

EXHIBIT HOURS:

Thursday, 11 a.m.-3 p.m.;
5 p.m.-7:30 p.m.

Friday, 11 a.m.-3:30 p.m.

POST-CONFERENCE WORKSHOPS:

Saturday, 9 a.m.-6 p.m.

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E-Business Conference Goes Back to the Future

BY CHRISTINA PURPI

This year's eBusiness Conference and Expo has been completely overhauled due to the recent rise and fall of the dot-com industry and will emphasize realistic solutions to place

businesses back on the right track. Sponsored by CMP Media Inc., the conference and expo are set to take place from June 12 to June 14 at the San Jose (Calif.) Convention Center. The four tracks being offered

are "Customers: The Heart of your E-Business," "Execution: What It Really Takes to Get the Job Done," "Infrastructure: Building a Foundation for Long-Term E-Business Success" and "Real-Life Case Studies." The

topics will cover what it takes to manage a successful e-business. A detailed listing of all the courses, tutorials and keynotes is available at www.ebusinesssexpo.com/june2001.

The conference will have

three keynote speakers: Louis Burns, vice president and general manager of the Desktop Platform Group at Intel Corp.; Timothy Chou, president and CEO of Oracle.com; and Irving Wladawsky-Berger, vice president of technology and strategy for the IBM Server Group.

The customer track will offer courses such as "Building More Effective B2B Customer Infrastructures" and "The Privacy Debate: What Do Customers and Businesses Really Want?" which dig into practical customer-relationship challenges.

Two tutorials will be offered on the Monday before the conference begins: "XML: Applying the Glue That Integrates Today's Enterprise E-Business Applications," which will include a highly technical case study and go over every angle of XML; and "Wireless: Overcoming the Real-World Challenges of Mobile Application Development," which will identify strategies for deploying Web content in mobile devices. ■



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Monday, Noon-6 p.m.
Tuesday, 8 a.m.-5 p.m.
Wednesday, 8 a.m.-5 p.m.
Thursday, 8 a.m.-4 p.m.

CONFERENCE SESSIONS:

Monday, 9:30 a.m.-3:30 p.m.
(workshop)
Tuesday, 10 a.m.-5 p.m.
Wednesday, 10 a.m.-5 p.m.
Thursday, 10 a.m.-5 p.m.

EXHIBIT HOURS:

Tuesday, 10 a.m.-5 p.m.
Wednesday, 10 a.m.-5 p.m.
Thursday, 10 a.m.-4 p.m.

KEYNOTE SESSIONS:

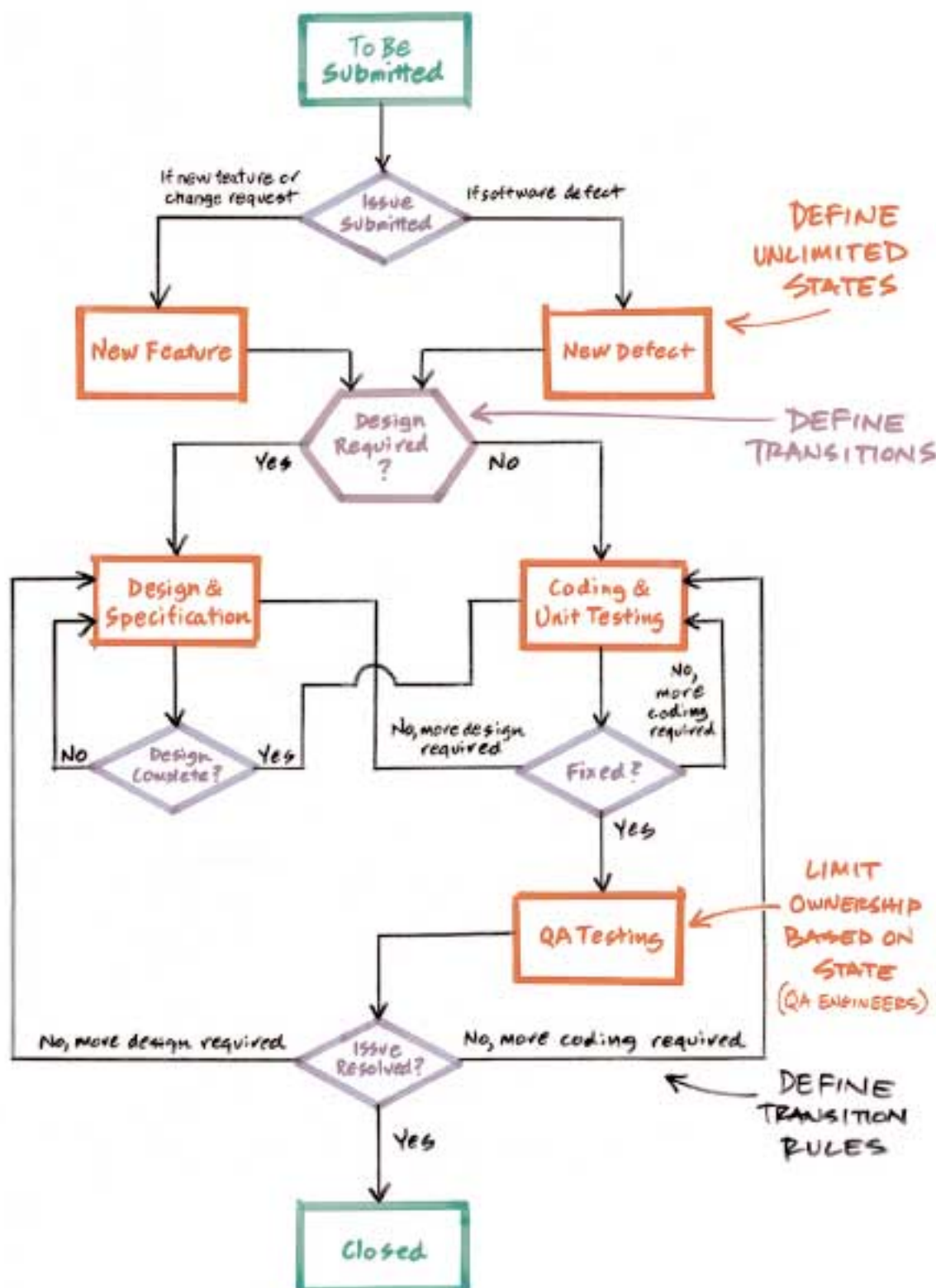
Tuesday, 9 a.m.-10 a.m.
"Technology Standards and the Next Generation of E-Business,"
Irving Wladawsky-Berger

Wednesday, 9 a.m.-10 a.m.
"Reinventing E-Business Infrastructure With Peer-to-Peer Technology,"
Louis Burns

Thursday, 9 a.m.-10 a.m.
"E-Business Now," Timothy Chou

www.ebusinesssexpo.com/june2001

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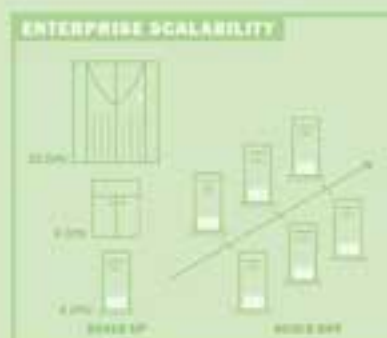
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News Briefs

MORE PRODUCTS

◀ continued from page 5 exams. Virtual Test Center costs \$49.99, while Virtual Trainer costs \$99.99 . . . SpeechStudio Inc.'s updated SpeechStudio C++ works with Microsoft's C++ and Speech API (SAPI). **SpeechStudio C++ 1.7** supports SAPI 5 initialization, dynamic grammar creation, recognition parsing, automatic What Can You Say generation, voice recording and text-to-speech. SpeechStudio C++ 1.7 costs \$1,595.

PEOPLE

Dave Adams has been appointed vice president of finance and administration and CFO at Unify Corp., while **Frank Verardi** was named vice president of sales and marketing, and **Dave Glende** was promoted to CTO and vice president of products.

STANDARDS

The Object Management Group has put out Requests for Proposals for seven new standards. Four come from the OMG's Domain Technology Committee, encompassing interoperability between accounts



receivable/accounts payable; distributed accounting facility for telecommunications; standardizing representation, storage and retrieval of skill and competency data used in human-resource management; and automating entry and tracking of care-givers' orders in health-care delivery settings. The other three come from the Platform Technology Committee: two new standards extending **OMG's Common Warehouse Metamodel**, and one that standardizes on a management interface for CORBA's existing load-balancing capability. ■

AONIX

◀ continued from page 1

made up of four main pieces. They are the Select Enterprise modeling tool; the Select Component Manager portal for managing components and putting them into a repository; the Process Director tool that includes the Select Perspective development methodology; and a synchronization tool—one each for Java, C and Visual Basic—that synchronizes business requirements directly to code and allows for round-trip engineering between the model and the code, Abdo said. Another tool not included in Component Factory, Reviewer for Select Enterprise, can find errors in syntax and UML and recommend changes.

Abdo said Component Factory, which sells for \$4,000 per seat, benefits both developers and managers in that developers can search the repository for components while managers can link to outside component vendors—ComponentSource is the first to be linked—to bring components into the repository. IBM's WebSphere server is the



Select Enterprise serves a wider audience than Software Through Pictures.

first that will be supported by Component Factory, according to Abdo.

For the WebSphere integration, Aonix has added a thread through the Process Director methodology that is focused on Web application development, according to Hedley Apperley, director of marketing for the Select business solutions division of Aonix. Also, the Enterprise modeling tool is synchronized with the Visual Age for Java repository, allowing modelers and coders to make changes that are reflected in each other's work via reverse-engineering. Finally, the Component Manager can "interrogate the WebSphere app server," Apperley said, to find out which components are running and where, and can auto-generate UML deployment diagrams off of that information.

Princeton acquired Select Software Tools plc out of bankruptcy in June 1999, but, according to Abdo, Princeton now has decided to focus on its main-frame business and so spun off Select. Aonix will sell the products under the Select brand. ■

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JAVA MESSAGING

◀ continued from page 1

trading room. The data source publishes the data and sends it only to clients who have subscribed to it. For example, all brokers might get stock quotations, but only a few might subscribe to bond quotations. The

market leader in pub-sub middleware is Tibco Software Inc.

These two models of messaging middleware thrived for many years not strictly because of the value they brought. Part of their success was due to vendor lock-in. To make use of messaging middleware, every program that needs to commu-

nicate with another program must use the APIs of the site's chosen middleware package. And, predictably, no two middleware packages have the same set of APIs, so if a company that uses MQseries decides to migrate to another middleware package, it would have to change virtually every applica-

tion it owned. This daunting task has kept customers from even thinking about straying. It also allowed many vendors to continuously bill sites for support contracts that the customer could not imagine forgoing.

Several times customers banded together to get out of this vendor lock-in by urging

the main vendors to agree on a standard set of APIs, so that migration might be possible. But all these efforts were doomed to failure, as every vendor had the same incentive to make sure no standard set of APIs was adopted. "It was sad to see a whole industry so opposed to the interest of its customers. Every vendor would point to its efforts to promote a standard, while at the same time making sure it did nothing to further that process," said Norton Greenfield, president of Implements Inc., a Massachusetts-based Internet consultancy.

DISTRIBUTED COMPUTING

The need for messaging middleware increased significantly during the late 1990s, because the incursion of the Web into the business cycle significantly changed business computing architecture. Businesses were forced to install dedicated single-purpose servers (such as Web servers, firewalls, application servers, file servers and database servers, among others) whose communications were the lifeblood of the IT functions. These servers are frequently described as stovepipes—dependent islands handling incoming data and shipping it off to the next server in the process. And the movement of this data is increasingly being performed by messaging middleware.

According to Dana Gardner, research director for messaging and collaboration at Aberdeen Group, the need for messaging in these environments will only increase. Market analyst IDC concurs with projections of a 40 percent compound annual growth rate for the middleware market during the next three years. In view of this, IT managers faced the glum prospect of further dependence on proprietary APIs. Then, salvation arrived. It came not in the form of an initiative supported by major vendors, but by the unilateral release of a single product: JavaSoft's Java Message Service (JMS).

JMS is a specification for APIs to a messaging middleware engine and a definition of what services that engine must provide. Analyst Roy Schulte at Gartner Group said, "This is the first meaningful standard." What gives JMS market credibility is that JavaSoft made JMS compliance a requirement for packages seeking J2EE certification.

▶ continued on page 31

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JAVA MESSAGING

← continued from page 30

Suddenly, a multitude of vendors associated with Java but never with middleware were now in the messaging business. Companies like BEA, Bluestone (now part of Hewlett-Packard) and even Allaire (now part of Macromedia) were now liberating IT shops from middleware lock-in.

JMS IN NEW APPLICATIONS

Java's universality allows JMS to be deployed in IT projects other than campus infrastructure. One installation, which is one of the earliest large-scale deployments of JMS, is the criminal justice system in Pennsylvania. In August 1996, the governor's office launched Justice Network (JNET), a project linking law-enforcement departments to keep them informed of material events. JNET executive director Linda Rosenberg said, "We wanted to tie in the motor vehicles agency, the parole department and other agencies so that when an arrest was made, for example, anyone looking for the suspect would be immediately notified."

To do this, Rosenberg hired KPMG Consulting to design a solution. KPMG's chief architect on the project, Dave Woolfenden, explained the central problem in the design: "The traditional approach to this problem was to create a centralized database that would be used by all agencies, and to force the agencies to migrate to it. But experience has shown this does not work well. The records used by the department of transportation, the courts and the police have very different formats and layouts, so creating a master database would be almost impossible. Likewise, creating a database that would abstract the data from various departments is unworkable. Then, departments would have to update the master database each in their own way and on their own schedule resulting in a database that was not always current. Ultimately, we settled on publish/subscribe messaging, where departments could subscribe to any individual they were interested in. Should the suspect show up at a welfare agency or be pulled over for a traffic stop, this information would be published to all subscribing parties in real time."

Continuing, Woolfenden said,

"Once we were on to this idea, we looked at a lot of technologies. While investigating CORBA-based solutions, we came upon JMS, and since we were already using Java, its use in JNET made a lot of sense." JNET chose a package from Fiorano Software. Zenim Luo, the chief architect of infrastructure for JNET, said,

"We chose Fiorano because they had shipping product and because Fiorano had PKI implemented in its package. And we definitely needed PKI security." Once Fiorano was brought in, the JNET team wrote an API layer above JMS. Today, JNET allows real-time notification of any events of interest for any-

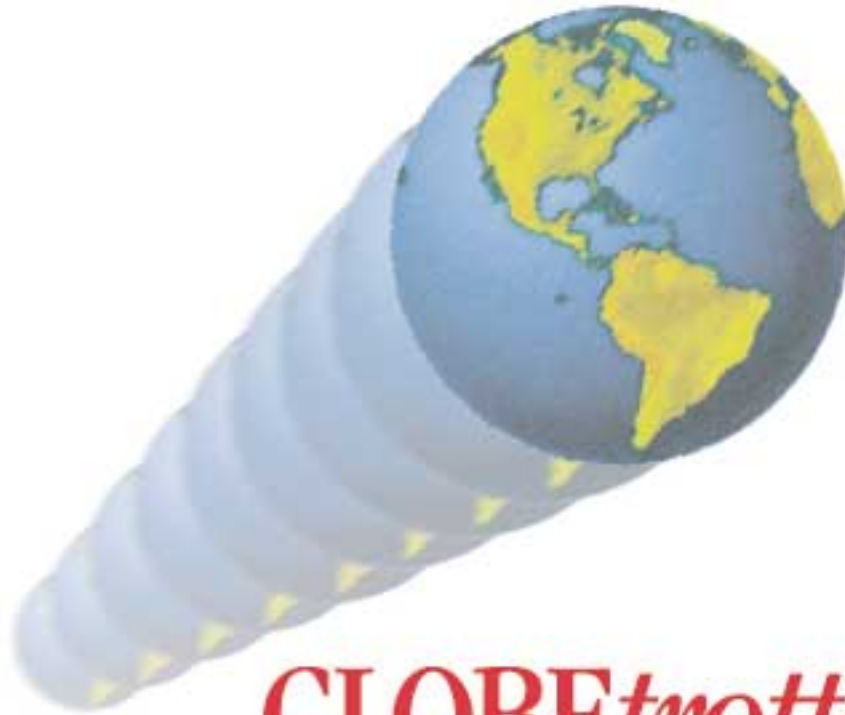
one that Pennsylvania law enforcement is tracking.

Despite this use of JMS in a publish/subscribe application, "most sites will use JMS for point-to-point messaging in the context of regular messaging middleware," Aberdeen's Gardner pointed out. "Some sites may have two different middle-

ware systems going: JMS for Web services and distributed computing, while maintaining something like MQseries for their interactions with the back-room mainframe." But at least they now have this option. ■

Andrew Binstock is the principal analyst at Pacific Data Works LLC.

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States Vote for Component Development

BY CHRISTINA PURPI

Trying to reduce redundancy among their bureaucracies as well as save taxpayer dollars, the National Association of State Chief Information Officers has voted to implement a compo-

nent reuse exchange that will provide a resource for application development throughout the 50 states.

According to Larry Singer, the chairman of the component reuse subcommittee at

the NASCIO (www.nasire.org) and CIO for the state of Georgia, the NASCIO needed a way to exchange components that could work across multiple platforms, without each state having to pay for the transfer

of the components.

By an overwhelming vote, the NASCIO will implement a National Software Component Exchange (NSCE), allowing developers throughout the 50 states to share one another's soft-

ware components. The exchange will be hosted on the ComponentSource Web site (www.componentsource.com), as that company's bid was selected by the organization. Components that provide code for driver registration renewals or the processing of crime statistics such as fingerprints will now be shared among states that choose to participate. "Quite a few states have shown interest; [the NSCE] was well received," said Sam Patterson, CEO of ComponentSource.

"Fundamentally, 80 percent of the applications the states use are the same, which is why this will benefit the majority of the states," said the NASCIO's Singer, who continued to explain that the only reason a state would not enroll in this program is because it does not have the technological capabilities.

Due to laws governing state-to-state commerce, the sharing of intellectual property among the states will be free of charge. "We are in the middle of negotiating who is paying what," said Patterson. "However, the long-term benefits will outweigh any costs the states might have to pay because there is a low barrier for entry. This could save them millions of dollars in the long run."

This exchange will greatly reduce time-to-market and will result in savings in development costs for any government application, said Singer.

States will be able to reuse software that another state has already written, without the added cost of purchasing a component. States and local governments will also have access to ComponentSource's public marketplace, a repository of more than 6,500 components.

According to Singer, a three-tiered approach will be applied that will include a repository for intrastate sharing, a national repository for interstate trading and a community tier for sharing common components.

Five or six states will start swapping components as early as the summer, and by September there should be a bigger flurry of states signing up, according to Singer. Arkansas, Ohio, Pennsylvania and Washington are already taking part and helping to implement this process, he said.

The timing is perfect, Singer stressed, because more and more applications are being built for Unix and Windows platforms are being assembled with components. ■



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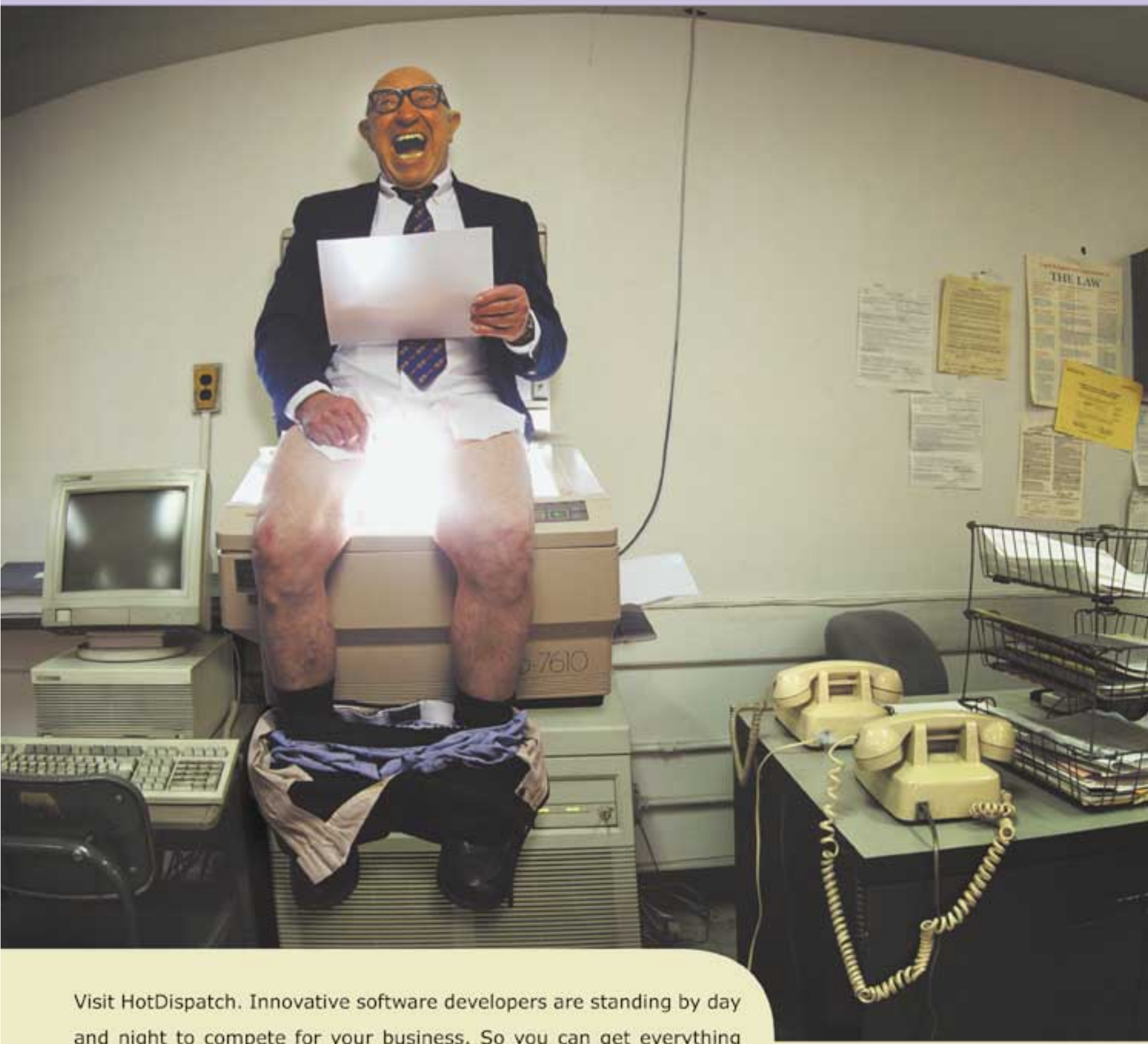


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Rational's Suite Makes Room for Java

Modeling, code and content tools integrate with leading IDEs in sixth major rollout

BY DAVID RUBINSTEIN

In the sixth release of its product suite since January 1999, Rational Software Corp. has added a new developer network portal and made a strong move to support the Java 2 platform with enhanced features in its Rose, ClearCase and ContentStudio tools. It also has made minor upgrades to the 13 existing products in the suite.

Also, Rational released two new products at April's Embedded Systems Conference: Rational Test RealTime suite for modeling embedded system tests, and QualityArchitect RealTime, which adds test automation capabilities to the Rose RealTime UML design automation tool.

Rational targeted the Rose UML modeling tool for the most

upgrades for Java, according to senior product manager Dave Rosenlund. Among the new features is an "auto-sync" capability built into Rose that updates the model and code from the four leading Java IDEs at time intervals set by the developer.

Rosenlund explained that prior to this functionality, developers had to manually keep the model in sync with the code. "A developer working in an IDE on code would have to remember to go to the modeling tool and manually reverse-engineer" to keep the model and code together, he said. Although the tool is configurable, he said that most customers set the auto-sync to work in real time, so that any changes to the code or model are automatically made in the

other. Rose now can work with Borland's JBuilder, IBM's Visual Age for Java, Sun's Forte for Java and WebGain's VisualCafé—"these four IDEs represent something like 80 to 90 percent of the Java market," Rosenlund said, adding that this release of Rational's ClearCase code-management utility adds support for Forte for Java.

Other improvements to Rose include the inclusion of 20 out-of-the-box software design patterns, called e-business accelerators, that Rosenlund said can provide developers with a jumpstart for Java applications. He explained that developers can choose a pattern from a list in Rose and enter the parameters in a dialog box for that element of the design pattern. From that, a Rose model is generated for that pattern. Rose now also has the ability to round-trip engineer applications built using the Java Server Pages (JSP) programming model, he said, adding that Active Server Pages round-trip engineering already exists.

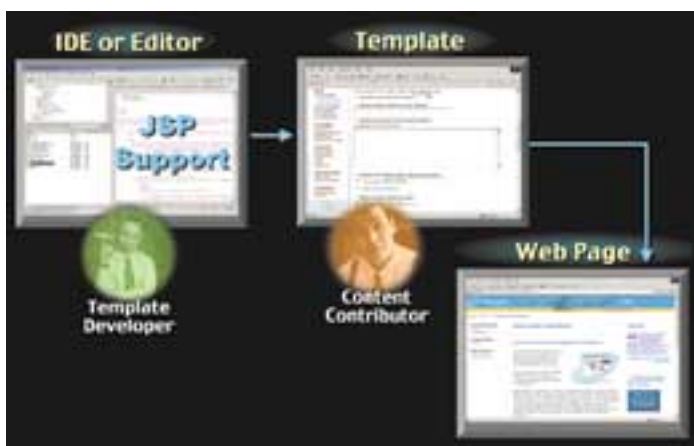
Rational has added JSP templates into its ContentStudio content management tool set, with deployment support for BEA's WebLogic and IBM's WebSphere application servers. ContentStudio can extract code from anywhere in the network and deploy it to Web servers,

Rosenlund said, supplementing functionality already built in for ASP creation and deployment.

On the portal front, for the first time Rational is considering its developer-oriented Web resources as part of its suite of products. The new Rational Developer Network results from the February acquisition of Catapulse, which was working on an online community, according to

Rosenlund. Only Rational's suite customers will be given access to the portal, he said.

Included in the portal is content authored by Rational for its developers, links to other relevant sites, and registration for Rational training courses. Rosenlund said a handful of courses have been Web-enabled and that more will be made available via the portal over time. ■



JSP templates help developers create Web pages from existing code.

XMLink Provides Connectivity for B-to-B

Prolifics extends its Tuxedo server customer base

BY DOUGLAS FINLAY

Looking to provide a link between IBM Corp.'s WebSphere J2EE application server and BEA Systems Inc.'s Tuxedo transaction server, Prolifics, a subsidiary of JYACC Inc., has unveiled a new SOAP connector that brings the products together. Called XMLink, the new connector costs approximately \$20,000 per site license, according to the company.

"We had two goals in mind," said Nicolas Jabbour, Prolifics' vice president of business development for e-solutions. "One was to let developers integrate Tuxedo into WebSphere, and the other was to integrate business-to-business applications, using data from main-

frame and *n*-tier system repositories, into Tuxedo."

To help integrate WebSphere and Tuxedo with external mainframe and *n*-tier data sources, XMLink takes advantage of Sun's new J2EE Connector Architecture and Common Client Interface, Jabbour said. The development interface, he added, is analogous to JDBC. "Programmers would write their JDBC code regardless of the database, and the database drivers would then access the database," he said; in a CICS, IMS or other mainframe transaction-processing environment, developers would similarly use XMLink.

Jabbour said XMLink is designed to extend the standard

communication method into business-to-business applications for Tuxedo, too. "We were able to create a SOAP-to-J2EE converter into the XMLink, in which an entity such as JSP or EJB can build a SOAP message, send that message to the XMLink, and then forward it to J2EE for conversion to the native API for the database, such as Tuxedo." This allows developers to call Web services from JSP applications or EJBs, he said, and have the requests returned as XML messages from Tuxedo.

While the company (www.prolifics.com) is targeting WebSphere with XMLink, Jabbour claimed XMLink could run on any J2EE application server. ■

From XML Schema to Java

XML Studio now supports new W3C spec

BY ALAN ZEICHICK

Java developers who anticipate adopting the newly approved XML Schema might look at XML Studio 2.5, recently released into beta from Breeze Factor LLC and due to begin shipping in mid-July.

XML Studio is a tool that analyzes the structure of an XML document, and then permits developers to bind that structure to a set of Java classes, according to David Droman, the company's (www.breezefactor.com) business development manager.

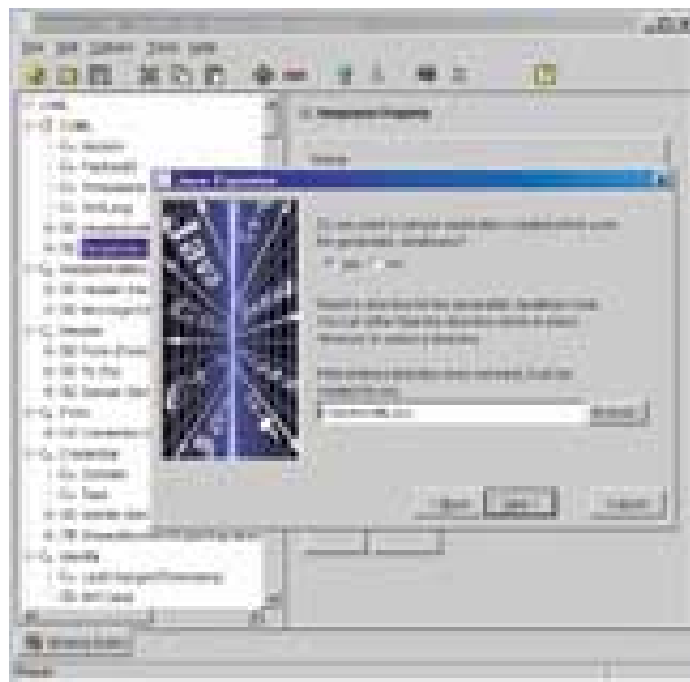
XML Studio then generates all of the Java code, creating a framework for creating and using documents that conform to the original document's structure, he said.

The new release, said Droman, not only adds support for the XML Schema, now a pro-

posed standard from the W3C, but also can handle documents that have complex content models, which might include multiple inheritance, which makes them difficult to assign to traditional object-oriented classes.

The new XML Schema support means that XML Studio now will read in an XML Schema-compliant document definition and generate Java classes with all of the appropriate data types and content relationships. The software already was able to generate Java classes and Java beans from XML DTDs, sample XML documents and relational database structure, he said.

XML Studio 2.5 was scheduled to enter general beta testing on May 28, and is priced at \$495 per developer seat, which includes an internal deployment license. ■



XML Studio can translate XML Schema documents into Java beans.

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ROGUE WAVE

◀ continued from page 1

er. "We had a small services group in Boston focused on large-scale object and object-relational persistence," he said. This group will continue with its narrow focus while the company fields a second

consulting force of 13 based in Boulder, Colo. This initial group will be augmented by what Becker called "Rogue Wave junkies," a group of small business partners who are knowledgeable about Rogue Wave's tools and libraries.

"The new solutions group will provide training, mentor-

ing, assistance with project management, even helping with architecture," said Becker. "Maybe someone won't want us to do a \$10 million project, but they might need us for two weeks to help them with components they've already purchased. Companies have been asking us for the

service, but we've not had the capability to provide it," he said, adding that Rogue Wave's goal is the transfer of expertise from the consultants to the client, rather than engaging in long-term project-management contracts.

The changes to Rogue Wave's libraries (www.rogue

wave.com) are designed to simplify the offerings, according to Scott Hendrickson, director of product management. Previously, the company had a series of nine separate libraries in its .h++ product family, said Hendrickson, and those libraries had complex interdependencies. The libraries have now been repackaged into four separate products, offered under the SourcePro C++ brand.

The main offering is SourcePro Core, which contains a basic set of libraries the company says masks the low-level intricacies of the C++ language.

The three other packages rely on libraries included with SourcePro Core:

SourcePro DB provides tools for object-oriented relational database access in C++; SourcePro Net provides the code for networking protocols, such as new support for SSL; and SourcePro



The goal is to transfer knowledge, says Rogue Wave's Becker.

Analysis contains C++ components for solving mathematical problems in business and research. Pricing for the SourcePro modules varies depending on deployment operating system (Solaris or Windows), and the number of servers running the application.

"These new libraries don't have the complex dependencies [of the .h++ products]," said Hendrickson, "and reduce their granularity so that developers can focus more on solving business problems." With the exceptions of a few APIs removed during the repackaging of the components, there are no other changes that would affect developers migrating from .h++ to SourcePro. "We have incorporated most of the technology from .h++ to SourcePro," he added.

For the future, Hendrickson expects Rogue Wave to support lightweight messaging, with libraries to help C++ developers work with XML, SOAP and WSDL. But don't expect the company's focus to encompass other languages. "We see companies focusing on C++ in the core of the application. I don't see Rogue Wave producing Java components the same way we have produced C++ components," he said. ■



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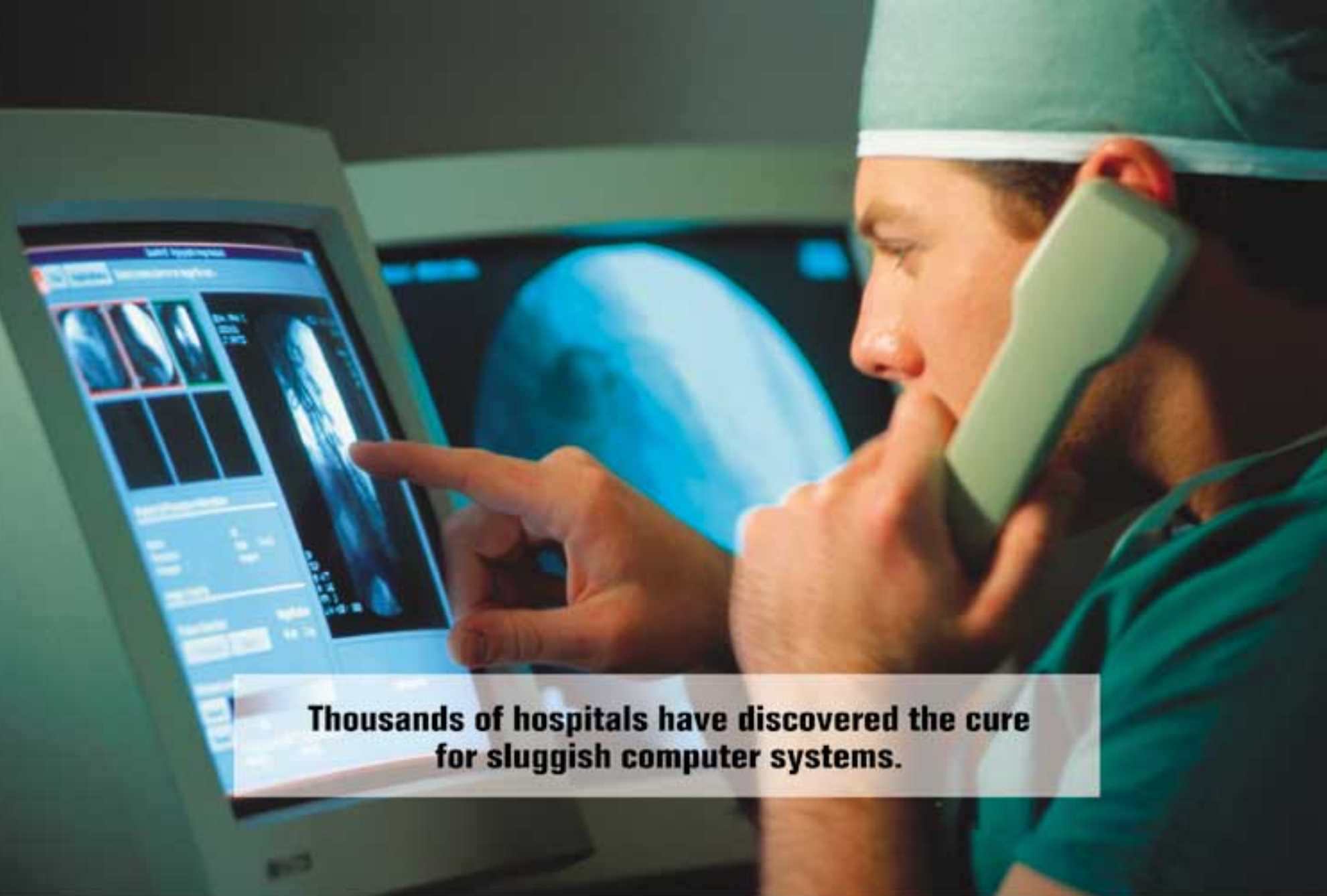
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PointBase Goes for Performance

Memory, speed enhancements built into Java database server line

BY DOUGLAS FINLAY

Insisting that its Java database performance within corporate America is ready for prime time, PointBase Inc. is planning

to release version 4.0 of its Java-based PointBase Server, PointBase Embedded server and PointBase UniSync for mobile devices on June 3, to coincide

with the JavaOne Show in San Francisco, June 4 to June 8. The company claims that these new versions substantially increase both memory efficiency

and performance, making them comparable to current conventional databases but with a small 700K footprint.

"Corporate America and the

Global 2000 have thought in many cases that Java has some performance limitations to it, such as speed, and that it has a stigma attached to it regarding methods for developing in native code," said Cameron McEachern, PointBase's (www.pointbase.com) vice president for marketing and corporate development. He said that even though there are thousands of J2EE servers in use, as well as EJB implementations now available, there is still an undercurrent of thought that Java is not a high-performance environment.

McEachern asserted that these updated JDBC- and J2EE-compliant databases push the envelope in offering embedded Java databases that can outperform databases using native code. "Version 4.0 is a major new release that offers performance enhancements from 5 percent to over 60 times the previous iterations," he continued. "Rev 4 drives a lot of performance into the product as well as a significant amount of new reliability."

New in version 4.0 is an enhancement to the database's memory-management scheme, according to McEachern. "A new feature in the database permits developers to dynamically alter the size of the kernel according to what features are being used by the database," he said, adding that if developers are not going to use certain types of functionality against the database, then that functionality does not have to be loaded. "While general databases have significant functionality, they do not allow you to turn the load on or off," he said.

He said that the new memory functionality can be adjusted at the development stage or within the device environment, to enable more efficient management of memory across all mobile platforms in a consistent and organized fashion.

Also new is the ability to retrieve a 1MB block of data from databases up to 60 times faster than previous iterations, he said, as well as a 5 percent increase in speed in handling protocol management over wide area networks.

In addition, PointBase's UniSync utility now offers bidirectional integration with Oracle database servers to enable replication of the data. "As updates are made to the Oracle database, they can be replicated seamlessly to the PointBase database," he said. ■

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Keynote Address

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Robert X. Cringely

Tuesday, July 10

12:00 pm - 1:00 pm

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For First Time, Embedded Linux Expo Stands Alone

BY EDWARD J. CORREIA

In a sure sign that Linux as an embedded operating system is taking root, the Embedded Linux Expo & Conference for the first time in its brief history will stand alone. The conference, which has run only twice before, has in the past shared space with the larger Embedded Computing Show; both are organized by the RTC Group (www.rtcgroup.com).

On Monday, June 25, and Thursday, June 28, the ELEC will feature two days of tutorials. Conferences will take place on Tuesday and Wednesday. The two-day conference is priced at \$79 in advance and \$99 at the door. Admission to exhibits—which are open only on Tuesday—is free.

Tutorials will range from a fundamental session covering “ground-up” embedded Linux device development assuming no prior Linux knowledge, to advanced sessions detailing GUI integration, cross-development techniques and flash booting. Tutorials cost \$495 each or \$895 for both.

On Tuesday, Bruce Perens, senior adviser of Linux systems operations at Hewlett-Packard Co., will deliver a keynote titled “Issues With Embedded Linux and the Open Source Movement.” Perens was the primary author of “The Open Source Definition,” which has been described as one of the movement’s formative documents. Perens also will be involved in a panel discussion on Tuesday

thrashing out the legal issues surrounding open-source development. He will be joined by Jordan Becker, a Silicon Valley attorney; Matthew Harris, COO of Lineo; and Victor

Yodaiken, a 20-year Unix programming veteran.

Wednesday’s keynote is titled “Maneuvering the x86 in Tight Quarters,” and will be delivered by Vaughn Pratt,

chairman of Tiquit Computers and professor emeritus of the computer science department at Stanford University. The discussion will explore issues and obstacles surrounding

embedded development using Intel’s x86 architecture, and speculate on whether it will dominate in the embedded market as it has in the desktop and server arenas. ■

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EXHIBIT HOURS:

Tuesday, 9 a.m.-4 p.m.

KEYNOTE SESSIONS:

Tuesday, 8:30 a.m.-9:15 a.m.
“Issues With Embedded Linux and the Open Source Movement,” Bruce Perens

Wednesday, 8:30 a.m.-9:15 a.m.
“Maneuvering the x86 in Tight Quarters,” Vaughn Pratt

PANEL DISCUSSION:

Tuesday, 1 p.m.-2 p.m.

TUTORIALS:

Monday, June 25, 8:30 a.m.-5:30 p.m.
Thursday, June 28, 8:30 a.m.-5:30 p.m.

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SavaJe XE Brings J2SE to Small Appliances

BY EDWARD J. CORREIA

Java developer SavaJe Technologies is preparing to release SavaJe XE, an embedded operating system and virtual machine based on Sun's Java 2 Standard Edition that the company claims

can run applications 60 times faster than competitive RTOS/JVM combinations while offering access to J2SE APIs.

According to product manager Hoony Youn, SavaJe (pronounced "savage") XE at its

heart is a multithreaded, time-sliced pre-emptive kernel comparable to Microsoft's Windows CE and Symbian's EPOC, but with two distinctions: native Java APIs and faster Java execution.

SavaJe XE's performance

gains, Youn claimed, are due mainly to its optimization for running Java 2 applications. "In a typical application, most of the CPU time is spent in libraries. SavaJe XE eliminates many of the portability and translation

layers required to run Java applications." For example, graphics operations do not need to be mapped to underlying native graphics as on Windows CE or Linux, he said. "The Java 2 API is our native API, and the OS has been architected to run Java 2 applications efficiently."

Youn said other SavaJe XE advantages include quicker development time and increased device functionality afforded by an all-inclusive API. "We give the developer access to a full set of Java APIs rather than the subset of APIs that the J2ME [Java 2 Micro Edition] restricts them to. So there's no learning curve in terms of what's there and what's not. That translates to faster development time."

Youn also said that unlike most JVM/RTOS combinations, accessing hardware directly from within a Java application is not an issue. "J2SE has a complete set of interfaces that will talk to most basic hardware devices like serial ports, buses and peripherals," he said, adding that for devices not specifically supported by J2SE, device drivers can be written in C.

The operating system also permits developers to add functionality written in C or assembler as "modules" running independently of Java on top of the kernel with either Java or proprietary APIs used to access module functionality.

But its increased feature set is not without drawbacks. SavaJe XE requires 12MB of device memory to embed and 32MB of RAM to execute, Youn said, although most of that is available for applications. Such requirements seem to rule out the smallest handhelds, he added, such as those running the Palm OS. The system initially will support StrongARM processors, with specific versions available for the Compaq iPaq and Psion NetBook handheld computers.

System binaries will be priced between \$10 and \$100 per device, depending on quantity. A developer license will cost \$12,000 per seat, and a porting license will be priced at \$60,000. SavaJe (www.savaje.com) is scheduled to release SavaJe XE to open beta at the upcoming JavaOne show in San Francisco, which begins June 4. General release is scheduled for September. The system has been in limited beta since April. ■

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Segue Software Transitions eConfidence Test Components

BY EDWARD J. CORREIA

Software testing tools developer Segue Software Inc. has updated two parts of its eConfidence trio of testing programs for Unix and Windows.

SilkPerformer 4.5, which performs load testing and performance analysis, now can load-test WAP applications and can simulate the load of multiple WAP clients. New remote installation capabilities permit multiple load agent computers to be set up from a single com-

puter, the company said. The \$25,000 tool also can now test applications built to use SOAP as well as those for the i-mode wireless messaging system.

Improvements to SilkTest 5.5, the company's \$6,500 auto-

mated function and regression testing tool, adds automated verification for Netscape 6.0 using the Direct Object Model (DOM) and for Internet Explorer 5.5. SilkTest's Scripting capabilities have been extended to

support C/C++, Java, JavaScript and Visual Basic.

The complete eConfidence suite also now includes HTML-based reporting of test results and integration with the company's SilkMeter licensing soft-

ware. SilkPilot, the third component in the eConfidence suite (www.segue.com), which adds functional and regression testing capabilities for CORBA and EJB server objects, was not updated and costs \$7,500. ■

Z-WORLD RELEASES LOW-COST SBC

BY EDWARD J. CORREIA

Embedded hardware maker Z-World Inc. has released the first in a new series of small, inexpensive Ethernet-enabled single-board computers designed for networked control and monitoring applications.

According to the company, the 3.4-x-4-inch BL2000 can contain as many as 28 digital I/O channels, including five or seven dual-purpose analog-to-digital inputs. Built around a 22MHz processor, the BL2000 also can accommodate four RS-323/485 ports, 128K SRAM and 256K flash. Also on board are seven



The versatile BL2000 is suitable for network monitoring apps.

timers, a set of LEDs, a relay and a time/date clock with battery backup. Available configurations include two non-Ethernet versions and units with digital-to-analog capability. Ethernet versions start at \$199 each; without networking, prices begin at \$159.

The company (www.zworld.com) also offers an integrated development environment with C compiler and a royalty-free TCP/IP stack. Boards can be programmed and debugged using the Ethernet port and also can be designed to open sockets to remote devices, serve Web pages and send e-mail, the company said. ■

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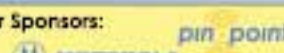
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Bo Pitsker hasn't been a big proponent of software development outsourcing. But, like many IT shops, his travel automation and management company is faced with time-to-market pressures and doesn't have the in-house resources to meet development targets. Pitsker's only option is to outsource.

"I couldn't move fast enough to hire and train developers and then get a product out the door," said Pitsker, CTO of TransNetwork Technology (www.tnnett.com).

There are two main reasons why companies are outsourcing development: to save time and to save money. The time-to-market benefit is well understood by most companies today, particularly those that have been deploying Internet and e-commerce applications. As time-to-market windows continue to narrow, the prospect of outsourcing applications, or even just components, becomes very attractive.

Saving money, otherwise known as Total Cost of Ownership (TCO), is not as well understood. For one thing, some companies have no idea what their development costs are and don't know how to track the real costs of outsourcing. The cost of communication with an outside firm alone can be surprisingly high, Pitsker said, particularly if you have a loose definition of requirements. That's why companies like Qualitative Software Management (www.qsm.com) offer software life-cycle and benchmarking tools.

Having a specification is important, but development outsourcing involves a lot more. A common problem occurs when a company designs a product and writes up a specification, and then tosses it over the fence to an outsourcer who will write the code. Successful outsourcing requires a clear definition of objectives, time lines, deliverables, costs and communication requirements. Otherwise, much can go wrong.

What you outsource may also be an issue. Often, outsourcing is considered to



Sending Out Your Apps Can Be Tricky

Make sure your requirements are clearly spelled out, experts warn

BY LISA MORGAN

be limited to just coding. In truth, you can outsource design verification, design, coding and testing. Many of the American outsourcing firms do more than just coding, particularly the ones that consider themselves consultants as well as developers. Development consultants often verify in-house designs or design products for customers as well as develop the software. Some, to a lesser degree, do testing.

Charles Stack, CEO of component vendor Flashline.com, advocates the outsourcing of component development because companies can maintain better

control of their software assets. Instead of outsourcing an entire application that may or may not integrate with other applications, companies can outsource the development of certain components that interoperate with components developed in-house. "Most companies don't have the experience to architect a component-based system yet, although many have built a framework," he said.

OFFSHORE DEVELOPMENT

Brian Phelps, CEO of Vested Development Inc. (www.vestedev.com), said

despite the recent technology industry slowdown, there are still some 450,000 unfilled IT jobs in the U.S. and, as a result, offshore outsourcing is an important consideration. Vested Development has two offices in Russia and one in Ireland to go with its two in the U.S.

"A lot of companies have a hiring freeze but are slow to lay off their technical staff," he said. "They're the last to go because good IT people are the hardest to hire."

There is an increasing trend to outsource development to firms in Russia and India because the labor is cheaper, and if really pressed for time, development can occur 24 hours a day if the development teams are located in the right time zones. Most companies are outsourcing the coding portion of development to these firms, making sure to send along a very tight specification. The problem, said Hirshol Pheir, CEO of Zuma Innovations Inc. (www.zuma.com), is that specs are not static. Things change. Perhaps the design wasn't optimized or customer requirements have changed.

Vested Development's Phelps agrees that outsourcing only the coding portion to offshore developers is probably the most practical but also said that a number of companies are outsourcing testing as well. Black-box testing can be done successfully if the tests are well documented and the product has a tight spec.



Varying methodologies is a problem, says TransNetwork's Pitsker. communication may be a problem due to language differences.

There are also differences in education, which is a good thing, according to Phelps. In Russia, technical classes focus more on problem solving and less on rote memorization. Instead of studying general theory, Russians are taught how to practically apply theories and methodologies, Phelps said.

STICKY OUTSOURCING SUBJECTS

TransNetwork's Pitsker is and always has been a stickler about methodologies. If he's going to outsource development, the company had better be able to support whatever methodology he's using. This is often a problem, not only for Pitsker but also for other enterprise customers and outsourcing firms.

Sure, Java and COM are popular, as is UML, but not everyone follows the same methodologies. A lot of outsourcing firms are flexible about supporting different types of methodologies because they realize their customers will ask for this type of support. Some firms have their own methodologies and try to get customers to follow them. If you already have a major investment in tools, you might expect the

IT'S THE END RESULT THAT COUNTS

Hirshol Pheir, Zuma Innovations Inc.

Hirshol Pheir is the chief executive at Zuma Innovations Inc., an outsourcing firm that specializes in manufacturing and business process application development.

SD Times: What is the business case for hiring a firm like yours?

Hirshol Pheir: Companies are finding it's less expensive to hire someone who already has [existing expertise]. We can accomplish more in less time. They also want to focus on their core competency.

Can you give us an example of the types of projects you're working on?

We just worked on an electronic prescription pad for doctors that's actually a CE device. Our next project is for an SME [small to medium enterprise] that

has 120 to 150 sales reps. Right now, they're doing everything manually and faxing documents to the main office. It's time-consuming and costly, so they want to fix the problem using software.

At what point in the software development life cycle do you work with clients?

We can work with clients throughout the entire life cycle. We never just finish a project and then disappear. We often consult with clients on the front end to help identify solutions, and then we build them.

How about methodologies? Which do you support, and how do you work with clients that are adamant about a certain methodology?

It's the end result that counts. We're not tied to any particular methodology

because some projects don't require it. We use standards like COM/DCOM and Java. You have to identify the best technology and then use it. We're always looking at what's out there and have lots of tools. Our goal is to be open and flexible.

What sort of issues do you run into with clients?

When you're developing automation software, you have to be political and careful when you talk to the company. People associate automation with job displacement. The truth is, if the company is smart, they'll grow instead of lay off



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TRICKY

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outsourcing firm to also use those tools.

"A lot of IT shops depend on one smart guy in IT who uses Microsoft Project and calls it a methodology," said Pitsker. "[Some documents] that are

supposed to be used as road maps read like gothic novels. Those are inefficient methods."

Function and performance are also worth noting, Pitsker said. A good specification will define both function and performance, but performance may be neglected by outsourcers who are not testing code or simulat-

ing the actual environment. When Pitsker was vice president of engineering for Zantaz.com, an Internet storage company, he hired a firm that did NT development. When he noticed problems with software performance, the outsourcer suggested throwing more servers at the problem and implementing more soft-

ware. The firm also asked Pitsker to pay for the training of their developers, and the price—above and beyond the original scope of the project—was \$500,000.

"If you're doing a single-box test, you can test functionality but certainly not performance," he said. "We were deploying

software on large networks, so the results were not conclusive."

WHAT IT COSTS

Most outsourcing firms bill on a time-and-materials basis. If you hire a Big Five consulting firm like Accenture or Ernst & Young for a large development project, you can spend several million dollars. Smaller firms may bill per hour based on experience or may roll all fees into a "blended rate" that averages out hourly rates. Still others will bill using a phased approach, where phase one is the delivery of a proposal that outlines the other phases, such as design and coding.

Although the phased approach may sound foreign to some, it may be a good option when estimating the total cost of a project is nearly impossible. Some of the consulting-oriented outsourcing firms will tell you that estimating costs accurately is often difficult when clients are not specific enough. That's one

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END RESULT

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people. Sometimes the scope of work is a problem. A customer may want to continue putting more features into a product, but it's not that simple. There is a development cycle, and if you interrupt it, you may have to rearchitect [the product]. Lastly, customers are anxious. They want instant payback. Let's say you spent six figures on a small project and it paid for itself in two weeks. It's hard to show.

Companies are starting to outsource development to firms in Russia and India to save money. What's your opinion about this given that Zuma is a U.S.-based firm?

You've probably heard if you're going to outsource offshore, you need a tight spec. You can write the tightest spec in the world, but it always changes. It's hard to manage that if you're dealing with different parts of the world. It's pretty hard to yell at someone who is 7,000 miles away. If you try to save money and are disappointed with the results, remember this: You get what you pay for.

How do you measure success?

Nothing feels better than when a project goes well. I love seeing the smile on the customer's face. That's why I'm in this business. It also feels good when you finish a project ahead of schedule. —Lisa Morgan

TRICKY

← continued from page 44

reason why they are consulting as opposed to just coding. If they have a hand in the front-end definition and design, it's easier to estimate what the costs will be to build an application.

"Sometimes we get a non-technical client who doesn't know what he wants," said Vest-ed Development's Phelps. "That's [one reason] why we have developers on site."

Regardless of whom you hire, executives are going to want to know what it will cost and what the benefits will be. Some companies look at the out-of-pocket costs, while others focus on return on investment in real dollars to time or payback.

Hiring an outsourcing firm is usually not the responsibility of any one person. In a small firm, it may be the CIO or vice president of research and development who makes the call, and in larger companies a division or section manager; however, the decision may also be cross-functional. Perhaps the project manager of an Internet initiative and the IT department are involved in an e-commerce project, for example.

"Sometimes 20 people can say no, but only one person can say yes," said Phelps.

RELATIONSHIP ISSUES

There is a trend toward forming partnerships with outsourcing firms. In a partnership, the parties are generally interested in more than just the people who make up one company. They are also interested in knowing who their partner's partners are and how they might be of help. Some companies also expect partners to make a long-term investment either financially through a formal partnership, or through an informal dedication to providing on-going quality service. Some are using outsourcing firms as strategic partners.

"When I hire [an outsourcing] firm, I want them to be committed to my company's success," said TransNetwork's Pitsker. "I want them fully involved so much so I'm willing to take the right one to a funding meeting if necessary. People may think that's crazy, but it's not. Sometimes it pays to introduce partners who are known for getting results."

Managing an outsourced relationship requires effort on both parts, whether the rela-

tionship is defined as a partnership or an arms-length vendor/client relationship. Clients must be willing to clearly state their objectives, set benchmarks for performance and monitor the outsourcing firm.

Conversely, outsourcers must manage client expectations in regard to the scope of

the project and the project itself. Quite often, changes occur on the client's end that require changes to the design. From a consulting perspective, this is known as a change in project scope and may cause the project to be re-estimated.

"Customers sometimes have trouble specifying tasks exactly

enough," said Ken Waln, CTO of Edify Corp. "It often takes domain knowledge that you might not have in-house. In that case, perhaps you're better working with an outsourcing firm who can help you define the parameters. Spending time up-front often saves time."

Not all outsourcing firms

are alike, so make sure that the one you retain clearly understands your objectives and expectations. Then, monitor progress and hold the outsourcing firm and yourself responsible for the results. You can outsource development, but not necessarily the responsibility for the project's success. ■



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EDITORIAL

Tempest in a Teacup

For the past year or two, Microsoft has been saying that although it is truly committed to open software standards, it remains convinced of the superior benefits of closed-source software. During the first week of May, the company defended its long-held opposition to open-source software (OSS) in a speech by a top executive.

Craig Mundie, a Microsoft senior vice president, told New York University's Stern School of Business that the company believes in a "shared-source model"—where source code may be shared on a confidential basis with customers and partners but must be protected from broader distribution or unauthorized modification in order to protect the integrity of the software and to protect the company's revenue stream and intellectual property.

Mundie is absolutely right. Because Microsoft is almost completely reliant on software sales and licenses for its revenue, publicly releasing its source code would destroy the company. Microsoft is well within its rights to choose how it shares its intellectual property.

However, beyond the cute phrase, there is nothing new about what Mundie calls the shared-source model. For decades, large software companies have provided major clients with restricted access to all or portions of a platform's or application's source code as part of carefully crafted license terms.

Mundie further argued that "the OSS development model leads to a strong possibility of unhealthy 'forking' of a code base, resulting in the development of multiple incompatible versions of programs, weakened interoperability, product instability and hindering businesses' ability to strategically plan for the future. Furthermore, it has inherent security risks and can force intellectual property into the public domain."

Here, Mundie is dead wrong. Open-source projects rarely fork, but when they do, forking generally leads to more innovation and customer choice—not less, as Microsoft contends. The ability to fork a project is essential to prevent it from ossifying when its original sponsors lose interest or choose to go in a different direction. Many open-source projects have led to software that is often perceived as more stable and secure than proprietary solutions—not less. And despite Mundie's claim, the restrictive terms of the GNU General Public License do not force intellectual property into the public domain, because no developer is forced to incorporate GPL-licensed source code into an application. In fact, many open-source projects have licenses that lack the GPL's self-perpetuating restrictions.

The self-appointed spokesman of the open-source movement, Tim O'Reilly of O'Reilly and Associates, was equally disingenuous when he responded to Mundie's remarks, declaring in a statement, "Microsoft's 'Shared Source Philosophy' is a clear vindication of open source—they're lining up to embrace and extend the open-source development model." Calm down, Tim: Microsoft is doing no such thing. The company's read-only sharing of source code with customers is unrelated to the unrestricted private release of source code to the hacker community.

At the end of the day, both parties had merely reasserted their long-held and deeply entrenched positions. There is no change in Microsoft's fervent opposition to open-source software, and none should be expected. ■

GUEST VIEW

REVISITING BUILD VS. BUY

The build vs. buy challenge is upon us again, but this time with new twists. Yes, there are the usual issues such as costs, time, reliability, maintenance and competitive advantage, but now the ultimate challenge is to deliver applications faster with fewer resources, especially in this time of economic slowdown.

As has always been the case, companies may choose between buying commercial off-the-shelf (COTS) applications or developing their own apps internally. Over the past few years, technology has matured to the point that we have a strong, viable third option—assembling applications from commercially available software components. Recent maturation of infrastructure technologies such as J2EE, EJB and Windows DNA/COM has truly brought interoperable component infrastructures to the forefront. I would argue that fundamentally, components and application assembly are ready for prime time.

Let's take a look at the three scenarios:

Commercial off-the-shelf applications—The "Buy" Approach. Those companies that always buy COTS software are usually small-to-midsize companies that have a limited IT staff focused primarily on the administration of purchased applications rather than new development. In evaluating their business objectives, they have decided that internal software development is not a critical success factor. Typically, they buy best-of-breed products that serve different parts of the company, such as human resources, customer-relationship management, order entry and so forth. As they grow, these organizations often need to buy more sophisticated solutions—such as data warehousing or enterprise application integration (EAI) technologies—to help them integrate the various information and systems together. With the "buy" approach, they can minimize their limited staff's development responsibilities and focus instead on managing and integrating packaged applications.

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Building all applications internally—The "Build" Approach. Companies in industries such as finance, telecommunications and commercial software often take this approach since strategic software differentiators distinguish their business from the competition. For example, a bank might achieve competitive advantage through delivering a complex, personalized portfolio management system. Such a system might be obtainable only if developed internally to match the bank's core business processes and specific customer types. Developing technologies and applications internally guarantees a unique product designed specifically for their market and core business objectives. However, the relentless pace of change and the advantages of being "first to market" in their industries may impact their ability to "build" all applications.

Integrating home-grown and commercial components—The "Component Assembly" Approach. Leading-edge organizations can optimize their business infrastructure by standardizing on a few platforms and selected COTS applications, and then developing a few applications that drive their business objectives, creating competitive advantage. A midmarket insurance company, for example, might purchase an industry-standard risk-management package and then develop custom software that integrates with their core, proprietary systems and data. The result is quicker application readiness, faster time-to-market and a better alignment of resources with corporate objectives. In fact, one might predict that because they can better balance their business needs with flexible IT approaches, many of the companies in the first and second categories will need to evolve into the third category to thrive.

Regardless of which category may apply to your company, here are the questions to consider when assessing your software and application needs:

What is core to your business? Regularly take the time to consider core from both business and technology per-

spectives, including strengths and weaknesses. Remember that core to your business means those things that differentiate you from your competitors by providing strategic advantages. These are the things you want to build internally. However, be aware of those items that are not critical and can be bought to save both time and money.

What are your application delivery priorities and time-tables? Bringing applications online in optimal fashion requires balancing resources, knowledge and funds. Recognize time-to-market constraints. For more complex and/or noncore functionality, buying will speed your time-to-market while allowing your precious resources to focus on critical business objectives.

What are my financial and technical resources? What funding is available to purchase applications and components? What staff resources are available? Make sure that your staff has enough time and the right skills for the assignment. Investigate whether there might be a vendor or supplier with more appropriate skills and support than your development team. Remember that it makes sense to develop software in-house only when the application is core to creating a competitive advantage. Although the price for buying might seem steep at first glance, be sure to consider total lifetime costs of a system, including maintenance and updates. Often, a supplier can carry the burden of constant innovation faster and more economically by sharing cost over multiple customers.

What are the application's performance criteria? Performance spans not only speed and scalability, but also overall feature/function, reliability, maintainability and more. Sometimes, organizations decide to develop a given function internally because they think they'll be able to optimize, customize and tune it for better performance across their application. While perhaps true in some cases, one metric shows that by using

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BRIAN REED

GUEST VIEW

THE OPEN-SOURCE WIRELESS INTERNET

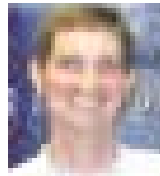
The world is anxiously awaiting 2003, the magic date when analysts and handset vendors predict that the number of potential wireless Web users will exceed the total number of wireline Internet users. Like the watershed date of 1994, when data communication eclipsed voice communication on global telecom networks, will 2003 mark another paradigm shift in network usage when a predicted 1 billion mobile devices eclipse wireline Internet counterparts? The question no one answers, however, is: How can a company author a single application that reaches these billion devices, as they would today if they wanted to reach all PC browsers?

Why is this hard? Because unlike the HTTP/HTML-based Web browser, there are incompatible wireless infrastructures today used in both

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handhelds and handsets. The leaders are WAP and i-mode, with a third emerging technology developed by Sun, Java 2 Micro Edition (J2ME). The global adoption rate of these technologies is approximately 60 percent i-mode, 39 percent WAP, and the remainder are individual, vendor-specific implementations (such as Palm and RIM). Developers must author individual presentations for each of these device classes, and thus the overhead in building multichannel applications grows rapidly as developers attempt to gain global coverage.

Each of these wireless technologies today is 100 percent proprietary and requires a dramatically different implementation. This presents a significant challenge to any organization that wants to provide either content (news, sports, stocks) or applications (games, entertainment, corporate field-force automation) to a global audience.



KEITH
BIGELOW

Take a global news publisher, like CNN. To target the 21 million i-mode users in Japan, CNN must create a Compact HTML (CHTML) presentation layer for its presentation technology, which is a near subset of HTML that all Internet development tools support today. But, when they choose to target Korea and Europe, CNN must target WAP devices that use the Wireless Markup Language (WML) for presentation technology. Finally, if CNN wants to offer content to professionals who have devices based on the Palm or RIM software stack, they must create a J2ME presentation technology, which is not a mark-up language like CHTML or WML at all, but rather Java code. To make matters worse, CNN will have to author a very special J2ME presentation for use in Japan, since the NTT DoCoMo implementation of J2ME, called i-Applet, doesn't conform to the Sun J2ME specification.

company, will I be able to prove which one pulled the plug if I don't have the ability to see inside all of the applications?

Will UCITA enable software vendors to require me to upgrade to newer versions of their software, even if I don't want to? What if I can't afford to? Am I out of business?

The combination of UCITA restrictions and ever-growing complexity of software appears to make a compelling case for use of open-source (or at least open-architecture) software for any company's mission-critical applications.

I for one would love to encounter in-depth analysis of the complications that legislation such as UCITA will bring about, but I expect that the result, while interesting speculation, would ultimately be made obsolete by the arena to which this is all inevitably heading: the judicial system. When I look back at the vibrancy and energy (and often sheer lunacy) of the past 20 years in computers, I wonder whether that spirit of open innovation has passed. Future generations of software developers may look back at the "naive '90s" with the same wry amusement as '80s

Is it any wonder that the wireless Internet hasn't realized its potential?

Each of the technologies above is copyrighted and licensed to device manufacturers and there are no open specifications or implementations of these technologies. The end-user experience that results from this is much like what the wireline Web was like in its early days: Instead of conflicting implementations by Netscape and Microsoft of HTML and associated scripting facilities, however, we now have WML/WAP, and CHTML i-mode for Web phones and J2ME handhelds, and SMS for pagers. Wireless Internet developers struggle to test code on as many phones and devices as possible, and the implementations of the proprietary technologies are so inconsistent as to force a "write once, test everywhere" behavior. In fact, an entire testing industry has sprung up as a result of the confusion.

The global wireline Internet, however, does not support proprietary, conflicting technologies. History demon-

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LETTERS TO THE EDITOR

BUGGIN' OVER DELPHI 6

Thanks for the article on Delphi 6 ("Borland Preps Delphi 6.0 for Release," May 1, page 1). Exciting reading, I must confess...makes you wonder if there is anything left that you can't do with D6?

On a more cautious note, given the huge range of new features—and indeed technologies—supported, I hope that the bug termination team has done its job better than was the case with the release of Delphi 4.

Looking forward to the actual release.

Martin Ease

Software Engineer

Sovereign Ltd., New Zealand

WHERE'S OPENNESS GONE?

What an interesting conjunction of columns on page 43 of your May 1 issue! At the bottom of the page, Mr. J.D. Hildebrand writes about new legal issues that challenge traditional concepts of ownership of data ("Let My Data Go"), and at the top of the page, Mr. Andrew Binstock describes why it is necessary for application developers and support personnel to have full access to the entire

data path of all those bits and bytes flowing between applications ("Off the Beaten Path"). Combining the articles leads to interesting questions:

If a vendor prohibits the re-engineering of proprietary data formats, how can developers and debuggers validate the data flowing into or out of complex integrated applications? If my e-commerce vendor won't let me see the data flowing into my ERP system, how can I find out why all of the shipping charges have mysteriously changed to \$0.00? For that matter, how would I have been able to connect them in the first place?

If it is perfectly legal for a corporation to collect megabytes of personal information about me and trade and sell that information, is it also legal for me to, say, deduce a company's active customer list based on IP traffic to its technical support Web site and sell that list to its competitors?

If just one of the dozen or more vendors of software for my e-company's Web site screws up its records, disables its software and crashes my

yuppies viewed the hippies of the 1960s. I'm not so much the hard-headed businessman that I won't regret the loss.

Michael Sherck

Information Manager
Geocel Corp.

MORE ON O-R

This article ("Object-Relational Mapping: Handy Tools of the Trade," May 1, page 31) does not mention other excellent O-R products, including Castor from ExoLab, JDX from Software Tree, and ObjectBridge (on SourceForge). And there are others.

David W. Forslund

Computer and
Computational Sciences
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WHAT DO YOU THINK?

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BIGELOW

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strates that the underlying data transfer protocol [TCP/IP], the text and file transfer protocols [HTTP, FTP] and even the presentation technologies themselves [HTML 1.0, 2.0, 3.0, 4.0 and its successor XHTML 1.0] were successful only after commercial entities implemented to them consistently. A proprietary wireless Internet is no more viable than the failed attempt by commercial vendors to keep the wireline Internet proprietary with the now ancient OSI initiative. It is not in the interest of the consumer, nor the carrier, nor the handset manufacturer, to have any barriers to adoption of new content and applications, which is precisely the state of the wireless Internet today. It is for this reason that even the most successful wireless Internet provider in the world, NTT DoCoMo, is making the move to open source.

With the expected release of the new WAP 2.0 and i-mode 3.0 specifications in 2001, both technologies take

dramatic steps to follow the successful path of the wireline Internet. Specifically, both WAP 2.0 and i-mode 3.0 have adopted the open-source XHTML-basic 1.0 standard as the foundation of their upgraded presentation platforms. This migration to XHTML is both a realization of the inevitable as well as a technologically wise choice.

XHTML is an XML reimplementation of the concepts of HTML and was developed using the open-source development methodology at the W3C. Since XHTML is derived from XML, it is easy for developers to extend and program to, and for tools vendors to support and automate. As the successor to HTML 4.0, which all PC browsers support today, XHTML is also the new de facto presentation technology for all new PC applications. In the very near future, only the size of the mobile device's screen will determine the difference in the application presentation delivered to phones, handhelds and PCs.

Where does this leave Java and J2ME devices? Since Java presentations are not a mark-

up language, but rather Java code, Java devices cannot make use of the XHTML standard. However, the evolution of Java/XML binding specifications, in open-source projects such as XMLC, JDOM, Zeus and kXML, provide a mechanism for Java client devices to parse an XML stream for presentation by the J2ME client. The XML data stream, identical to the XHTML stream in terms of data, simply removes the presentation mark-up. Thus, even J2ME applications will become easier for developers to build and easier for car-

riers to host, since XHTML in its over-the-wire characteristics is identical to XML, and the use of XHTML or XML will be transparent to the carrier network.

In this manner, open-source implementations and open standards actually bring to the wireless Internet the exact "commodity" nature of the wireline Internet that has made it so ubiquitous. As of this writing, Nokia has just launched an XHTML initiative for its new handsets, Motorola has launched J2ME handsets, and RIM and Palm

have just provided beta SDKs for their J2ME implementations. Ironically, it is via popular open-source projects that these new initiatives were first implemented, and handset vendors such as Motorola and technology authors such as Sun are now choosing to ship these open-source technologies to their developers to speed application time-to-market.

Open source and open standards continue to tear down the proprietary walls that inhibit the adoption of the wireless Internet. ■

REED

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a similar component from a commercial vendor, you might impact performance by only 2 percent to 5 percent while gaining more functionality and off-loading maintenance.

How will you measure ROI or justify the expense for purchased applications? Determine whether return on investment will be based on technical measures, business measures—or both—and then assess their relative costs and

benefits. Keep in mind the long-term integration issues: If you purchase a component or application today, will it integrate with existing or future home-grown components, applications and core business processes? If not, your purchase might be useless in two years. Will the integration effort be worth the benefits of the purchase? By choosing standards-based applications and components based on solid technologies such as Java, J2EE and COM+, you can minimize integration challenges and

future-proof your application development efforts.

All of those questions are part of the decision-making process. Ultimately, they should help companies answer the most important question: "Which application implementation strategy will help our company maximize our resources to meet our business objectives?" Indeed the answer for most will likely be "all of them." For those things that are core, insource them or build. For those that are not, outsource them or buy, and then integrate them all. ■

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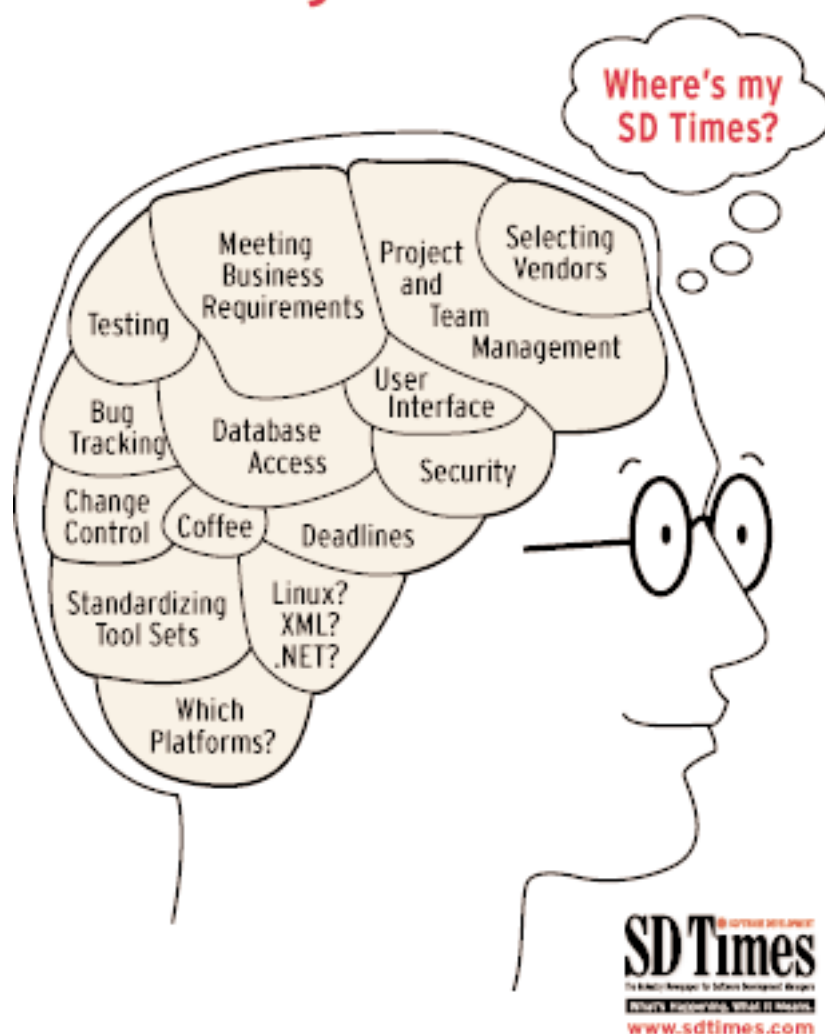
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Meet the Java Developer's Boss

It's the classic midsize enterprise shop: mainframes, minicomputers, Unix and Windows, databases, Web servers. The only new technology is Java. Three years ago, his programmers were experimenting with Java as a cross-platform rapid prototyping language. Today, Java 2 Enterprise Edition has become the company's standard platform for new projects.

That doesn't mean that he's blindly trusting Sun or the Java Community Process. There are a lot of questions surrounding messaging services and the update cycle for the Enterprise JavaBeans specification. And he's not happy with the fact that Sun uses its iPlanet alliance to compete against third-party application server developers like BEA and IBM, because that creates an inherent conflict of interest. It's hard to predict what Sun will do next. Still, the broad industry support behind J2EE has convinced him that the technology is his company's best bet. For now.

His biggest problem is the rapid change of Java-related specifications. New technologies, new approval requirements, compatibility claims – they're flying fast and furious. That's why the most important part of his job is carefully evaluating and then standardizing on best-of-breed products, partners and suppliers. There's no way he'll let individual programmers make that type of decision.




The Java publications? Forget those. He doesn't need reams of source code or tips for choosing the right API calls. He needs a wide-angle view of the entire spectrum of enterprise software development, and a rational, balanced outlook on future Java developments. He needs to know the trends, the products, the alliances, the NEWS and what it all means. That's why he reads SD Times.

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JAVA'S ACHILLES' HEEL PERSISTS

Today, many companies have deployed Java applications on servers and clients as part of their IT computing infrastructure. By and large, the client side is content with interfaces that look like Windows or Motif and performance that is unremarkable. On the server side, however, the performance penalty paid for Java's portability is starting to take an appreciable toll.

Consider, for example, the market for adapters. Adapters are software utilities used by companies doing interapplication communication. Such companies could be B-to-B software providers, EAI vendors or ERP vendors—any company that needs to communicate with other applications using native format. The data translation is done by adapters. They come from third-party vendors like Actional or GE Global Exchange Services, or they can be built in-house such as those from webMethods. Because adapters are computationally intensive and participate several times in every transaction, speed is paramount.

Likewise, because they appear on numerous platforms in a single enterprise, portability is paramount. Some vendors (such as Actional) chose to write their adapters in C and hand-port them to every platform. Actional has been rewarded with lightning-fast adapters. Others who embraced Java's

portability promise and hoped like hell the performance issue would go away are having great difficulty convincing would-be customers the performance of their adapters can scale. The problem is Java and the answer is no, it can't scale performance.

These vendors are becoming desperate because they suddenly find themselves in a position where their sales depend wholly on how much they can tune their clients' JVM for the demo. Currently, the fastest first-party JVMs (from the big Java vendors, that is) are those from IBM running on AIX. IBM has spent zillions optimizing performance of its JVMs and has done so with great success. Trouble is most folks have JVMs running on Windows and Solaris and are not exactly inclined to let a sales staff muck with the configuration of their JVM, much less their server. Customers want to see the demo run on existing systems as they are configured right there, right then.

So what are companies that have committed to Java to do? Several solutions exist. All require a pragmatic view of customers' needs. Customers want a solution that is going to work well and fast on their servers. If it's just the adapters they need, for goodness' sake,

OEM products from Actional or someone like them. Actional has solved the porting and performance problem. Why are these vendors still coding the adapters themselves? Suppose, though, it's not adapters but some other element that cannot be OEM'd. Again, be pragmatic. Meaning don't fall for the 100% Pure Java shtick. That's Sun's marketing. If certain small pieces have to be coded in C or C++ and then ported, then do this and code the rest in Java. This is what BEA, for example, has done with its J2EE implementation. BEA doesn't claim to be 100% Pure Java. The company does claim its J2EE runs on all major platforms. This is different from and wiser than Pure Java. Not only that, it runs fast.

Vendors whose products are not amenable to these solutions have a big problem. If they live and die by Java's performance, they are likely to die. This scenario will drive them, I believe, to a new solution: compiling Java to binary code. By this, I do not mean just-in-time compilers (JITs), those weird accelerators that translate Java bytecodes into binaries on-the-fly. Rather, I mean the class of products termed ahead-of-time (AOT) compilers. (This term is probably worth a column all its own.) These products take Java bytecodes and compile them to native binaries. AOTs already exist in the embedded market. Hewlett-Packard's

Turbo Chai is one; Wind River's Turbo J is another. AOTs are starting to appear in higher-end markets and, as such, may provide a reasonable solution for performance-strapped vendors. Tower's TowerJ compiler is one of the leading products. Jove from Instantiations is another contender. How many platforms they compile for and how complete the support is for Java libraries and APIs remain open questions. However, these products are a beginning and, I believe, point to the way for Java's future.

Under the scenario of real binary translation, Java shops will have the best of both worlds: the portability at the source-code level and at the byte-code level, and the performance at the binary level. Sun is the one company with a clear reason to oppose this evolution: If Java is reduced to a language rather than the whole Java environment, the war with Microsoft tilts decidedly toward Redmond. However, I think Sun's hand will be forced on this issue by .NET and C#. The two advantages these products have over Java are performance and the ability to support multiple languages. Taking away the performance edge will prevent many companies and vendors who have committed to Java from rethinking their choice. ■

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MIDDLEWARE WATCH



ANDREW BINSTOCK

DON'T FORGET THE WIRELESS

Recently I stumbled across another awkward industry buzzword. As if adding "e" or "i" in front of every available noun wasn't bad enough, now they've added consonants. The most recent offender is "m-commerce," which almost sounds as though you're wondering what commerce means, but actually refers to mobile commerce: the act of moving Web services out into stormy seas of cell phones, pagers, handhelds and cellular versus digital wireless networks.

Strangely, while Microsoft believes strongly in the power of m-commerce, we've seen precious little dedicated tool support for this kind of development. Fortunately for any fellow Visual Basic aficionados out there, I've found some quality third-party help.

It's called AppForge and is manufactured by a company of the same name (www.appforge.com). Fairly easy to use and not too expensive, this tool lets run-of-the-mill VB coders like me develop mobile applications for the Palm platform. To manage this though, you'll need a copy of AppForge (an evaluation of AppForge Professional is a great choice for starters) as well as Visual Basic 6.0 with Service Pack 4 and a fairly quick box running any version of Windows. I tried installing it inside my beta version of Visual Studio.NET, but the

poor thing couldn't handle that, though AppForge is supposedly working on a .NET-compliant version.

While AppForge will work as a porting tool, it's actually designed as a dedicated development platform for the Palm, including some nifty features like synchronizing with ODBC-compliant databases and adding Palm support for TrueType fonts, bitmaps and even AVI files. The company provides support and links to the Palm OS simulator, but I happen to live off a Palm Vx, so that really wasn't a problem.

Installing AppForge simply results in a dedicated AppForge menu within your VB IDE. This menu allows access to AppForge Help files (which I needed almost immediately—my fault, not theirs), their Palm-specific compiler and the AppForge properties settings. Most of this was straightforward, though in typical third-party ISV style, AppForge couldn't help but add some of its own naming conventions. What we're used to calling controls in Visual Basic, AppForge has to call "ingots," and, yes, they're quite different from what ships natively with Visual Basic 6.0.

There is a learning curve associated with AppForge, but it's not too steep as

long as you're fairly well acquainted with Visual Basic. Even so, however, I did run into a couple of problems with database access. For example, having only skimmed AppForge's docs, I was unaware that the software doesn't support Data Access Objects. Attempting to insert DAO into an application caused me to get a nasty Invalid Project Reference error.

Some reading on my part quickly pointed out the DAO error, but even after this was deleted from the project, I was still getting "DAO Unsupported" errors at compile time. That's because while AppForge does prevent a DAO data control from being placed on a project form, it doesn't detect the back-end reference that Visual Basic now automatically adds. You've got to puzzle that one out for yourself.

In addition, AppForge forces you to install a client-side library, dubbed the AppForge Booster. This contains everything your applications need to run and will suck up about 380K worth of space on the client Palm. The good thing is that with AppForge Booster installed, Visual Basic apps remain exceedingly small, so the storage requirements are a wash. And since AppForge also helps with easy client deployment of the Booster, this really isn't that big a drag.

Also on the upside, the software even

extends the Palm platform slightly. For example, if you've ever closely examined the inner workings of a Palm-to-PC hot syncing operation, you'll find that these are actually a series of operations performed by sub-apps called "conduits." There exists one for every Palm application being synced. That kind of custom development can be a real pain for every Palm app you design, so AppForge built something they call a "Universal Conduit" into its Professional Edition. The UC can be configured to provide hot syncing to any properly formatted ODBC database. That's pretty sweet in terms of saving extra work.

Getting back to m-commerce, third parties like AppForge are looking to extend the power of handhelds now in anticipation of big mobile-shopping and services bucks later on. A good move, and frankly, I'm surprised that Microsoft hasn't jumped more noticeably in this direction already. But then Redmond has time, as vendors like AppForge still need to remember little things like WAP and integrated support for other emerging wireless transaction standards. As it stands, AppForge is strictly a Palm application development tool with no real support for wireless. Without that, all you've got is "m" without the commerce. ■

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WINDOWS WATCH



OLIVER RIST



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TRUTH IN MARKETING

Are industry standards such that creating an unusable Web site can count as fraud? After my latest struggle with an e-commerce vendor, I think so.

The story began when I switched my servlet server from Apache's mod_jserv to mod_jk and Apache Tomcat. In doing so, the server, a 2-year-old Dell 500MHz P-III with 128MB RAM, crossed a performance threshold. Response in various tasks fell noticeably, application start-up took minutes, and the "chick-chick-chick" sound of paging was common. This is not to say that mod_jk or Tomcat are unusually memory hungry, but rather that all the daemons on my server had been adding up to something very close to a critical threshold, beyond which my system had to spend extraordinary amounts of effort and time moving memory onto and off of the much slower hard drives.

A RAM upgrade seemed the obvious solution. Before I go any further, let me be clear that phylogenetically speaking I am a pure-bred *Geekus aerodactylus* (from the Greek for "flying fingers"—a software geek) and haven't a drop of *Geekus gad-getum* blood in my body. All I care about is how big the data is and how fast it moves—I don't know one memory technology from the next. So when I went online to perform a price comparison, what I typed into the search engine was what my manual stated I needed—100MHz non-ECC SDRAM 72-pin modules.

The price leader was a memory superstore, whose name was familiar from their advertisements in any number of magazines. Their price, \$76.11 for a 256MB module, was 10 bucks or so less than their competitors'. Off to their site I went, using the deep link from the price-comparison site's page. Sure enough, there was a picture of a memory module, some specifications and an "Add to Shopping Cart" button. The breadcrumbs at the top of the page read "Memory->Generic Memory." Still not sure that I had the right type, I went to the company's homepage, where I entered my hardware model in a wizard. The result was a page that said there were "No details on this model," and beside it, there was a list of "Hot Buys" that included a link back to the same generic memory module. So I ordered the RAM quite confidently, paying \$7 for UPS Ground shipping and handling.

As you can guess, the RAM didn't work and my system crashed during boot-up. A second glance at the module showed that it was labeled as a 133MHz component. Was that the problem? When I finally got through to a representative and told her that they'd sent me the wrong module, she asserted, "No, the module's fine; we just have trouble with our labeling process." The first alarm bell began to ring. Her explanation that "you

can't use generic memory in a Dell server" caused the second one to sound. When she said the so-called generic module that was labeled a Hot Buy worked only in three obscure brands and that I'd have to buy Dell-specific memory for an additional \$30, I thought I didn't have any mental alarms left in reserve. But then she told me about the 20 percent restocking fee on the returned module.

While screaming at her supervisor, I surfed to Dell's site and saw I could buy the memory directly from Dell for less than the memory superstore quote (never mind the restocking fee on the mysteriously useless and mislabeled Hot Buy).

In one Monty Python sketch, the owner of the Whizzo Chocolate Co. was reprimanded for not putting a large red label on candy boxes, reading: "Warning! Lark's vomit!" The owner explained, "Our sales would plummet!" I had a similar conversation with the supervisor: If one is purchasing a product and goes through a wizard that includes one's model and is presented with a Hot Buy on the results page, and there's nothing on the Hot Buy's catalog page about compatibility, and one has to pay approximately much more to receive the desired product, then one has every right to characterize the situation as "bait and switch" fraud. The supervisor's defense was that the company divulged the restocking fee in the mile-long "user's agreement" that one must click through to purchase items.

WEB WATCH



LARRY O'BRIEN

IT'S WAR!

The cold war between the world's largest software company and the open-source community flared into open hostilities on May 3 when Craig Mundie made a presentation called "The Commercial Software Model" at New York University's Stern School of Business.

As Microsoft's senior vice president of advanced strategies, Mundie reports directly to Bill Gates. He is responsible for managing corporate policies regarding technical standards, and he represents Microsoft in Washington, D.C., where he has advised Congress and the White House.

Prior to his speech, Microsoft's posture toward open-source development—and especially toward Linux—had been all over the map. No more. Now Microsoft has adopted an official get-tough position intended to persuade customers and investors that open-source computing is wrongheaded, impractical and bad for the economy.

Mundie's thesis is that the challenges of moving the computer industry to the emergent internetworked future require coordinated efforts, massive investments in R&D and an economic model based on the value of intellectual property. The requisite coordination, investments and economics can be best managed, handily

enough, by huge software companies operating in a closed-source proprietary business environment—by corporations just like Microsoft, perhaps.

The computer industry's economic engine grew, Mundie said, because of companies that "invested heavily in research and development and sold their principal products at prices that covered their costs and generated profits that they reinvested in further research and development." These investments, Mundie asserted, were possible only because the resulting products were sold in an intellectual property-based marketplace of closed-source, proprietary code: "This research and development model, in turn, was almost always based on the importance of intellectual property rights. Whether copyrights, patents or trade secrets, it was this foundation in law that made it possible for companies to raise capital, take risks, focus on the long term and create sustainable business models."

Microsoft's new strategy vis-à-vis open-source computing is clear. The company is saying that open-source business models are incompatible with the success of the computer industry—

and the world economy as a whole. While paying lip service to the notion of an "intellectual commons," in which researchers make their work available for the common good, Mundie asserted that the importance of this tradition is that corporations can adopt and commercialize the research, spinning it into proprietary products, profits and equity.

Mundie then attacked the open-source model on two main fronts.

First, he asserted that open-source projects are vulnerable to "forking"—the division of a single source base into multiple incompatible versions. Yes, that's a danger; leaders of open-source projects think about the forking issue a lot and have been generally successful at preventing such forking. (Contrast their success with the incompatibilities that distinguish successive versions of Microsoft software. Somebody's getting forked, and it isn't the open-source community!)

Second, Mundie attacked the GNU Public License for its well-known "viral" property, which ensures that any code derived from GPL-licensed code must itself be subject to GPL licensing. This well-known aspect of the GPL is one reason there are so many different open-source licenses—most of which are not viral. By equating the open-source movement with the GPL,

A great deal of attention has been paid to usability failures that result in abandoned shopping carts. "Don't Make Me Think" is the name of an excellent short book on usability by Steve Krug (it's the best book to read on Web usability if you're involved in developing Web services but don't want to become a usability expert per se). "Three mindless, unambiguous clicks equals one click that requires thought" is one of his rules of thumb. The interesting thing about my RAM-buying experience is that the site made buying the *wrong thing* very easy and buying the right thing very hard (the supervisor knew of a way through their search that resulted in their over-expensive Dell memory coming up, but it involved scrolling past "Dell" to a separate line in a multihundred-item dropdown list).

The novelty of online buying is over. Web vendors can no longer hide behind rush-to-market pressures to excuse sales techniques that otherwise would be considered fraudulent. I didn't hesitate to report the company to the Better Business Bureau, along with screenshots of the offending pages. As for the useless generic RAM, I returned it in a box labeled "Contents: crunchy, raw, unboned, real, dead frog." ■

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Mundie is being baldly disingenuous.

This particular attack could not have been innocent. Microsoft has itself incorporated non-GPL open-source into commercial products. This is no secret. Mundie's willingness to be dishonest in this manner is a measure of just how threatened Microsoft feels by the open-source movement.

Finally, Mundie outlined a newly coherent vision of Microsoft's "code-sharing" programs, under which various constituencies are allowed glimpses of Microsoft's proprietary code on a look-but-don't-touch basis. Mundie asserted, without substantiating the claim, that these programs give Microsoft customers many of the same benefits they would enjoy from true open-source software.

The subtleties in Mundie's speech are marvelous. I recommend that you spend some time with it; you can find it at www.microsoft.com/presspass/exec/craig/05-03sharedsource.asp.

Then check out an analysis and rebuttal written and signed by members of the free and open-source software movements. It's a clear-headed and righteous document. Find it at <http://perens.com/Articles/StandTogether.html>. ■

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OPEN SOURCE



J.D. HILDEBRAND

TAKE ME TO YOUR LEADER

Throughout history, it has been the great men and women of vision who have shown us the way to betterment of our lives. Whether through mechanical or scientific advances, human rights or health care, societies have moved forward based on the strength of conviction of their leaders. They've been able not only to come up with an executable plan for making these ideas come to life, but also to get the public at large to buy into their vision. On top of that, they have had to convince workers that the vision is a sound one and create corporate cultures in which innovation and excitement can thrive.

So it was in the early years of what we call "high tech," when the promise of computers doing our shopping for us, helping our kids do their homework, and letting us communicate with people in remote corners of the world was an easy sell. The hard part was making it work. Now, we all have come to accept the pervasiveness of computers, just as our parents and grandparents took to telephones and television. We accept the notions of a World Wide Web and e-commerce. In business, we have placed many of our mission-critical data and processes in the trust of hardware and software vendors. In other words, the high-tech world is maturing. We believe in it.

Yet it is that very maturity that poses a huge challenge to the industry. The visionaries were all about growth—accept my idea, whether it's "The Future is Unlimited" or "The Network Is the Enterprise"—at a time when the high-tech world was relatively small. But now the industry has suffered a downturn, the first since so many businesses laid the foundation for computing under-

neath their operations. And now, it becomes critical for the captains of our industry to keep driving forward in a climate in which holding steady without slipping back appears to be a greater imperative. Shareholders, employees and economists all are wondering the same thing: Is this generation of leaders up to the task of repositioning their companies in this economic climate?

MONEY WATCH



DAVID RUBINSTEIN

Bill Gates, Microsoft: Gates has been the visionary behind Microsoft's meteoric rise to the position of occasionally most valuable company in the world by opening Windows on almost every desktop. When things looked most bleak, after a federal judge ruled the company was an illegal monopoly and left its future twisting in the wind, Gates handed the corporate reins to longtime Microsoft guy Steve Ballmer and went back to doing what he does best—in this case, shifting the company to push the .NET Framework while also encouraging a strong move into the games and set-top-box markets. If he can use his marketing machine to sell .NET outside of his traditional customer base, Gates should be able to position Microsoft for growth for some time to come.

Scott McNealy, Sun: Java has helped make McNealy's vision a reality, as the corporate world has embraced Sun's notion of machines interoperating with each other over disparate operating systems. Licensing fees for Java aside, the software end—Forte and iPlanet—has not performed as well as hoped, but Sun's real bread and butter is in the boxes. The recent emphasis on servers and storage keeps the company well positioned for future growth.

Larry Ellison, Oracle: Ellison,

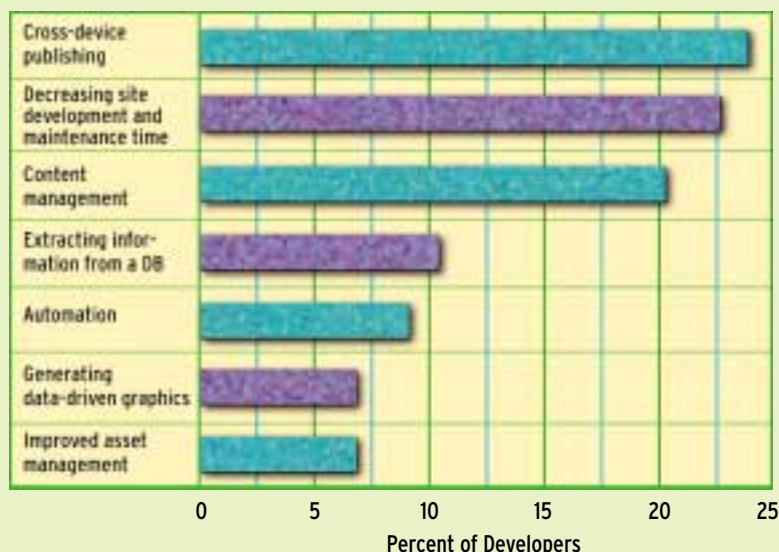
according to former colleagues, loves to compete. He'll have to, as IBM's recent acquisition of the Informix database solutions division makes Big Blue an immediate threat to Oracle in the Unix field, even as Oracle's e-marketplace initiative stalls against Ariba and Commerce One. Without Ray Lane, the longtime president and chief operating officer, momentum at Oracle seems to have been lost. Ellison needs to figure out how to recharge the company's batteries and get folks fired up about Oracle again.

Charles Wang, Computer Associates: Wang bought up everything is sight, and paid himself and president Sanjay Kumar ridiculous bonuses along the way. With most of his smaller competitors already devoured, and few looming on the horizon, how will Wang manage to sustain growth? He still has not managed to spell out a clear vision of what the company is...an infrastructure, plumbing company or an e-commerce application development company? After a series of nasty layoffs, a skewering in The New York Times over accounting practices, and the distraction of buying one of the worst clubs in the National Hockey League, Wang should go into the corporate bunker and stay there until he can clearly spell out CA's future direction.

Steve Jobs, Apple: Jobs created the Macintosh mystique but was on the sidelines as Apple teetered on the brink. The perennial comeback kid, he has returned to the helm, overseeing the creation of new hardware lines and the revamped operating system, and is pushing the word into the corporate world...all without running off the loyal following or changing the distinctive culture. It is too soon to measure the success of the strategies. ■

David Rubinstein is executive editor of SD Times.

What Is the Biggest Problem Facing Web Developers?



EVANS DATA WATCH

The need to serve Web pages to multiple devices is the most vexing problem for Web developers, according to a survey of more than 600 developers. Almost 24 percent of the surveyed Web developers looking to send their pages into cell phones and other handheld devices cited this as their biggest headache. Next on the list was decreasing site development and maintenance time, cited by about 23 percent as the most pressing problem.

Similarly, more than a third of those developers polled said cross-device publishing will be the most significant trend in Web development in the next two years, and more than 40 percent said they likely will target a wireless device in the coming year.

Source: North American Developer Survey, Vol. 1, 2001
Evans Data Corp.

www.evansdata.com

BUSINESS BRIEFS

Starbase Corp., maker of collaboration, bug-tracking and configuration-management software, has reported a record increase of 138 percent in revenue, amounting to \$41.64 million for the fiscal year ending March 31. Starbase's revenue for FY2000 was \$17.532 million. In addition, the fourth-quarter revenue of \$16.614 million represents a 168 percent improvement over the \$6.1 million of a year ago and a 74 percent increase over the previous quarter.

... **New Moon Systems Inc.** has announced that it will shift its business from being an application service provider to being a systems software vendor. The company will maintain its data center for developing and testing purposes but no longer will offer hosting services.

... **Iona Technologies Inc.** announced its highest-ever first-quarter revenues of \$42.7 million, continuing the company's decade-long streak of profitability.

... **Camelot Communications Corp.** has named Roderic Olvera Young and Carl Caramanna to head up **Camelot Media**, which will focus on public relations and marketing for Camelot trade shows. Young, senior vice president of communications, and Caramanna, director of business operations, will handle in-house and client-related marketing.

... **SilverStream Software Inc.** has reported first-quarter profits of \$22.9 million, a 76 percent increase over last year's \$13 million profits for the same period.

... **Fawcette Technical Publications** has closed its C++ Developers Journal, moving its content and readership to the company's flagship Visual Basic Programmers Journal as of its June issue.

CALENDAR OF EVENTS

Real-Time Workshop June 4-7
Herndon, Va.
OBJECT MANAGEMENT GROUP INC.
www.omg.org/news/meetings/realtime2001/index.htm

JavaOne June 4-8
San Francisco, **SUN MICROSYSTEMS INC.**
<http://servlet.java.sun.com/javaone>

UML World June 11-14
New York, **CMP MEDIA INC.**
www.umlworld.com

eBusiness Conference and Expo June 12-14
San Jose, Calif., **CMP MEDIA INC.**
www.ebusinessexpo.com/june2001

VBITS/VSLive June 20-23
New York
FAWCETTE TECHNICAL PUBLICATIONS
www.vbits.net/2001/ny

PC Expo/Tech Exchange Week June 25-28
New York, **CMP MEDIA INC.**
www.techxny.com

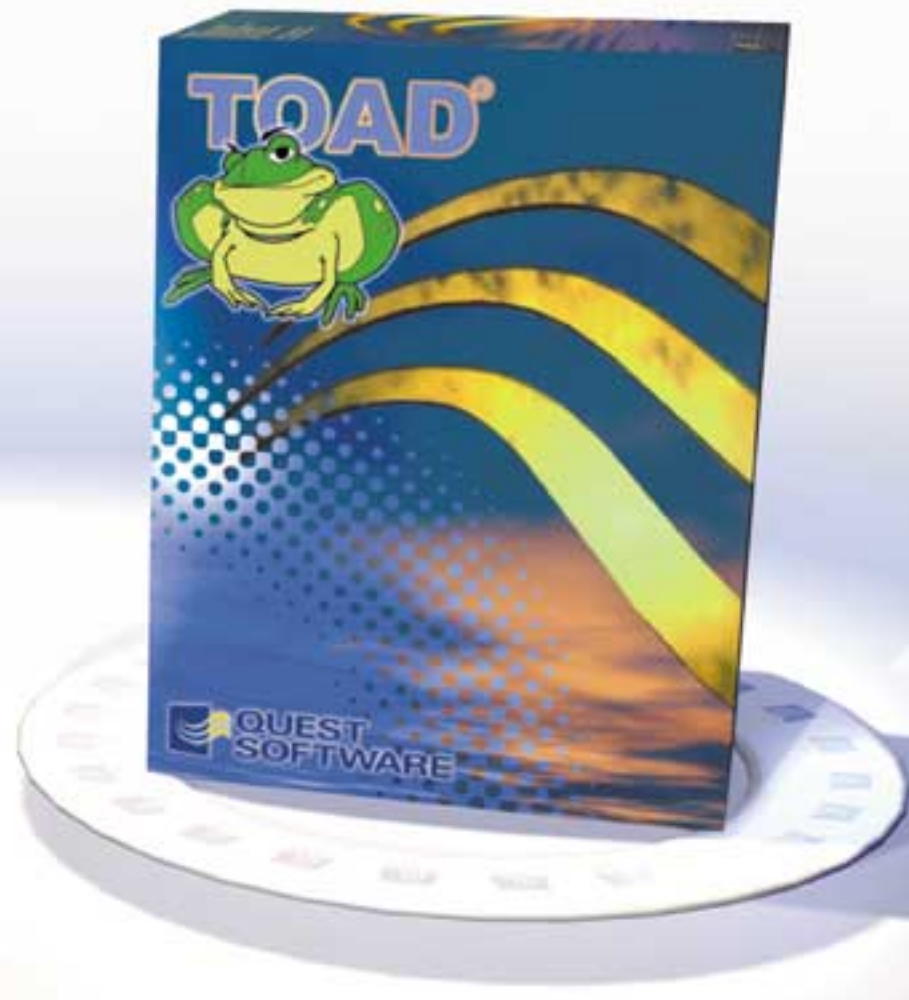
Wireless One June 25-28
Las Vegas, **101 COMMUNICATIONS LLC**
www.wirelessonecon.com/lasvegas

Embedded Linux Expo & Conference June 26-27
San Jose, Calif., **RTC GROUP**
www.rtcgroup.com/elinuxexpo/sanjose

Embedded Systems Conference July 9-12
Chicago, **CMP MEDIA INC.**
www.esconline.com/chicago

Information is subject to change. Send news about upcoming events to events@sdtimes.com.

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A hierarchical organizational chart is depicted against a textured blue background. At the top is a single hand pointing downwards. This hand is connected by a thin wire to two hands below it. The left hand of this second level is connected to three hands, and the right hand is connected to three hands. The leftmost hand of the third level is connected to two hands, and the hand to its right is connected to one hand. The rightmost hand of the third level is connected to one hand. The bottom-most hand is connected to one hand. All hands are pointing downwards, symbolizing a top-down hierarchy. The hands are rendered in a metallic, mechanical style with visible joints and wiring.

You are in charge of a team. And the work your team does. Staying on budget is critical. Staying on schedule is critical. So how do you make certain both of these things occur in every business process? Manage your workflow effectively with tTrack workflow solutions on the Web. With tTrack, everyone on your team shares the same information. So nothing is overlooked and nothing falls through the cracks. Visit our Web site for in-depth details we wouldn't feel right squeezing in here.

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